

# **Five-Year Review Report**

## **First Five-Year Review Report for Tomah Municipal Sanitary Landfill City of Tomah Monroe County, Wisconsin**

**April 2005**

### **PREPARED BY:**

**Wisconsin Department of Natural Resources  
West Central Region  
Eau Claire, Wisconsin**

**For U.S. EPA, Region V**

Approved by:

*Richard C. Karl*

Date:

*4-20-05*

Richard C. Karl, Director  
Superfund Division, Region V  
U.S. Environmental Protection Agency

EPA Region 5 Records Ctr.



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## **List of Acronyms**

ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
Cis-1,2 DCE	Cis-1,2 Dichloroethene
CTH	County Trunk Highway
EPA	United States Environmental Protection Agency
ES	Enforcement Standard per Wisconsin Administrative Code NR 140
CFR	Code of Federal Regulations
ECA	Environmental Contamination Assessment
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polynuclear Aromatic Hydrocarbon
PAL	Preventive Action Limit per Wisconsin Administrative Code NR 140
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene, also known as Tetrachloroethylene or Tetrachloroethene
PRP	Potentially Responsible Party
PVC	Poly vinyl chloride
RA	Remedial Action
RAA	Remedial Action Alternatives
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
RPM	Remedial Project Manager
ROD	Record of Decision
SDWA	Safe Drinking Water Act
TCE	Trichloroethylene
VOC	Volatile Organic Compound
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources

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## **Executive Summary**

The remedy for the Tomah Municipal Sanitary Landfill, City of Tomah, Monroe County, Wisconsin consists of two operable units (OUs). The OU-1 remedy includes construction of a cap over the waste area, an improved gas extraction system, site fencing, monitoring of groundwater, landfill gas, and drinking water, and institutional controls. The OU2 remedy includes monitored natural attenuation of the volatile organic compounds (VOCs) and other contaminants in the groundwater plume that has migrated from the landfill. The OU-1 remedy achieved remedial construction completion with approval of the Completion of Construction Report and Operations and Maintenance Plan on August 29, 2001. The trigger for this review is the beginning of construction of the OU-1 remedy, which was April 20, 2000.

The assessment of the five-year review found that the OU-1 remedy was constructed in substantial accordance with the requirements of the Record of Decision (ROD), and that it remains protective of human health and the environment in the short term. The immediate threats have been addressed and the long-term protectiveness is expected to be achieved when groundwater cleanup goals are attained, which is expected to require 50 years.

The OU-2 remedy, monitored natural attenuation (MNA) of the groundwater contamination, was selected by the U.S. EPA, with concurrence of the State of Wisconsin, in a Record of Decision signed by the EPA on September 24, 2003. Major components of the remedy include long-term groundwater monitoring and institutional controls. Long-term monitoring will be from an expanded well network that will permit more rigorous quantification of the expected contaminant natural attenuation. Based on groundwater data submitted thus far, there is no immediate threat to drinking water supplies.

The remedy at OU-1 currently protects human health and the environment because the landfill cap, and gas extraction system continue to function effectively and as intended in the ROD. Access to the site is controlled, groundwater and nearby residential wells are monitored, and the landfill gas extraction system is monitored as required. However, in order for the remedy to be protective in the long-term, a restrictive covenant on the landfill should be signed and recorded limiting future activities and uses of the property so that cap integrity is not breached, nor waste exposed.

The OU2 remedy currently protects human health and the environment because groundwater monitoring provides evidence that there is no current exposure, nor immediate threat of such exposure. However, in order for the remedy to be protective in the long-term, groundwater standards must be achieved, restrictive covenants on down-gradient properties underlain by contaminated groundwater must be implemented, and a plan for monitoring and enforcing institutional controls must be adopted to ensure long-term protectiveness.

Because the remedial actions at OU-1 and OU-2 are protective in the short-term, the site is protective of human health and the environment in the short-term. To be protective in the long-term, the appropriate restrictive covenants must be drafted and recorded, the necessary modifications made to existing restrictive covenants, and a plan to monitor and enforce institutional controls drafted and adopted.

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## Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name: Tomah Municipal Sanitary Landfill		
EPA ID: WID980610307		
Region: 5	State: WI	City/County: City of Tomah/Monroe County
SITE STATUS		
NPL status: Final		
Remediation status: Construction Complete --O & M On-going		
Multiple OUs? Yes	Construction completion date: 10/16/2003	
Has site been put into reuse? No		
REVIEW STATUS		
Lead agency: U.S. EPA		
Author name: Eileen Kramer		
Author title: Project Manager	Author affiliation: WDNR, West Central Region	
Review period:** 11 / 1 / 2003 to Jan. / 20 / 2005		
Date(s) of site inspection: 11/17-18/2004		
Type of review: Post-SARA Statutory		
Review number: One		
Triggering action: Actual RA on-site construction at OU-1		
Triggering action date 4/20/2000		
Due date (five years after triggering action date): 4/20/2005		

\* ["OU" refers to operable unit.]

\*\* [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]



## **Five-Year Review Summary Form, cont'd.**

### **Issues:**

- 1.) Vinyl chloride has been observed in surface water in Deer Creek down-gradient of landfill. The concentrations observed are very low and not considered to pose an ecological threat. It is not known if surface water impacts extend further downstream or if there is any contamination in the associated wetland.
- 2.) Down-gradient resident has chosen to retain private water supply well in spite of City's willingness to supply municipal water.
- 3.) On the southern perimeter of the landfill cap, a berm was constructed in the spring of 2004, to prevent surface water from running off the cap into the yards of homes in the Sunnyvale subdivision. Where the berm was raised, there is an area approximately 200' long (east-west) by 25' (north-south) wide with sparse to no grassy vegetation.
- 4.) PVC inner caps on several of the groundwater monitoring wells are cracked or broken.
- 5.) There is no deed restriction or restrictive covenant on the landfill area itself, that would provide notice to possible future property owners that the area is a landfill, and that would prohibit activities that might compromise the integrity of the cap.
- 6.) The restrictive covenant on the land north of the landfill does not provide for enforcement or approval of future modifications by the U.S. EPA.
- 7.) The restrictive covenant on the Martin property, east of the landfill, does not provide for enforcement or future modification by U.S. EPA or WDNR.
- 8.) Restrictive covenants restricting the use of groundwater on properties that overlie the contaminant plume are required by the OU-2 ROD, and have yet to be implemented.
- 9.) There is no plan in place to monitor and enforce institutional controls for OU-1 and OU-2.

### **Recommendations and Follow-up Actions:**

- 1.) The surface water in Deer Creek and in potentially impacted areas of the associated wetland should be further sampled and evaluated.
- 2.) The down-gradient supply well should be added to the site groundwater sampling schedule.
- 3.) The PRPs should proceed with re-seeding and mulching of the area. The area should be evaluated in 2006 to assure that vegetation that will help prevent erosion and degradation of the cap is vigorously re-established.
- 4.) The cracked or broken inner caps should be replaced.
- 5.) The City of Tomah should draft and record a restrictive covenant on the landfill, that would serve to provide notice to potential future landowners and to prohibit activities that might damage the cap or otherwise harm the protectiveness of the remedy.
- 6.) The City of Tomah should modify the restrictive covenant on the land north of the landfill to provide for enforcement and approval of future modifications by U.S. EPA.
- 7.) The restrictive covenant on the Martin property should be modified to provide for enforcement and approval of future modifications by the U.S. EPA and the WDNR.
- 8.) The PRPs should implement restrictive covenants on properties down-gradient of the landfill which overlie contaminated groundwater, for the purpose of preventing construction supply wells on the impacted properties.
- 9.) The PRPs should develop for U.S. EPA and WDNR review and approval a plan for monitoring and enforcing the OU-1 and OU-2 institutional controls. The plan should be incorporated into the remedies.

**Protectiveness Statement(s):**

The remedy at OU-1 currently protects human health and the environment because the landfill cap, and gas extraction system continue to function effectively and as intended in the ROD. Access to the site is controlled, groundwater and nearby residential wells are monitored, and the landfill gas extraction system is monitored as required.

The OU2 remedy currently protects human health and the environment because groundwater monitoring provides evidence that there is no current exposure, nor immediate threat of such exposure.

**Long-Term Protectiveness:**

In order for the OU-1 remedy to be protective in the long-term, a restrictive covenant on the landfill should be signed and recorded limiting future activities and uses of the property so that cap integrity is not breached, nor waste exposed.

In order for the OU-2 remedy to be protective in the long-term, groundwater standards must be achieved, restrictive covenants on down-gradient properties underlain by contaminated groundwater must be implemented, and a plan for monitoring and enforcing institutional controls must be adopted to ensure long-term protectiveness.

**Other Comments:**

None.

**Tomah Sanitary Municipal Landfill Superfund Site  
City of Tomah, Wisconsin  
Five-Year Review Report**

**I. Introduction**

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and recommendations to address them.

The Wisconsin Department of Natural Resources is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The U.S. EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The Wisconsin Department of Natural Resources (WDNR) conducted the five-year review of the remedies implemented at the Tomah Municipal Sanitary Landfill, City of Tomah, Monroe County, Wisconsin. This review was conducted by the State Project Manager for the entire site from November 1, 2004 through January 2005. Information for this review was obtained from several sources including site visits, reports submitted by contractors to the EPA, and reports prepared and submitted by Conestoga Rover Associates, under contract to the lead settling defendant International Paper (formerly Union Camp). This report documents the results of the review.

This is the first five-year review for the Tomah Municipal Sanitary Landfill Site. The triggering action for this statutory review is the initiation of construction of the OU1 source control remedy April 20, 2000. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

## II. Site Chronology

**Table 1 - Chronology of Site Events**

<b>TOMAH MUNICIPAL SANITARY LANDFILL</b>	
1959-79	City of Tomah operated landfill accepting municipal and industrial wastes
8/1975	Wisc. Dept. of Natural Resources (WDNR) ordered the City to close the landfill
1979	City closed the landfill, covered it with soil and planted grass and trees
6/1981	Union Camp Corp. (now International Paper) submitted a Notification of Hazardous Waste Activity for a facility in Tomah, indicating that it had disposed of 75,700 gallons of solvent waste.
12/1983	WDNR conducted a Potential Hazardous Waste Site Preliminary Assessment
6/1984	WDNR and a consulting firm conducted a site inspection. A down-gradient groundwater sampled was observed to contain contamination above health concern levels.
4/1985	WDNR nominated the site for inclusion on NPL.
3/1989	Site was added to NPL.
1993	City provided municipal water to homes south of the landfill to eliminate the potential hazard to private wells.
1993	U.S. EPA identified three potentially responsible parties (PRPs), City of Tomah, Union Camp and Veterans Administration Hospital
7/1993	U.S. EPA directed the PRPs to conduct a remedial investigation/feasibility study (RI/FS).
1/1994	The PRPs voluntarily entered into an Administrative Order on Consent to conduct the RI/FS.
7/1996	The PRPs installed an active gas extraction system at the southern boundary of the landfill to address off-site gas migration
9/1997	U.S.EPA signed a Record of Decision (ROD) for Source Control Operable Unit 1 (OU-1), selecting a remedy that includes capping, expansion of the gas extraction system and groundwater
9/1998	Union Camp entered into an AOC to conduct the Remedial Design
9/1999	A Unilateral Administrative Order (UAO) was issued for the remedial action.
2/2002	PRPs signed signed a Consent Decree for the remedial action. This document supersedes the UAO
8/2001	Completion of Construction Report for the remedial action was approved
2001-02	Groundwater Operable Unit 2 (OU-2) feasibility study conducted.
5/2003	OU-2 FS report approved.
9/2003	ROD for OU-2 signed selecting monitored natural attenuation for the remedial action.
10/2003	OU-2 Preliminary Close-Out Report signed
1/2005	Consent Decree for OU-2 remedy lodged with U.S. District Court

### **III. Background**

#### **Physical Characteristics**

The Tomah Municipal Sanitary Landfill is located on 40 acres in the SW1/4 of the NE1/4 of Section 32, Township 18 North, Range 1 West, Monroe County, Wisconsin. The City of Tomah has a population of approximately 8419 residents (2000 census). Properties adjacent to the Landfill are located in the Town of La Grange, which has a population of 1861. The site consists of an 18-acre unlined landfill situated on the southern portion of the 40-acre parcel that is owned by the City of Tomah. The site is bounded on the north by wetland, Deer Creek and residential properties with private water supply wells, on the east by Noth Avenue, wetland and residences, on the south by the Sunnyside subdivision of residences, and on the west by agricultural land. Homes in the Sunnyside subdivision are in the Town of La Grange but are served by municipal water. Homes to the northeast of the landfill and the groundwater plume are also located in the Town of La Grange, and most have municipal water supply.

Topography of the area is generally flat. Other than the waste mound, elevations on and near the site range from 960 feet mean sea level (msl) to 970 feet msl. Maximum elevation on the landfill is 986. Surface water drainage occurs to the south to a rip rap lined channel and culvert which carries runoff to the northwest corner of the landfill and discharges it to the ground surface; to the north toward the wetland and Deer Creek.

Data from soil borings indicate that the TMSL is underlain predominantly by residual sand material, formed by the in-place weathering of sandstone bedrock, and alluvial unconsolidated sands overlying the sandstone bedrock. The unconsolidated material consists of silty sands to poorly graded fine- to medium-grained sand. The thickness of the unconsolidated deposits in the immediate vicinity of the landfill ranges from 1 to 19 feet and generally increases toward Deer Creek. Underlying the unconsolidated sands is sandstone bedrock of Cambrian age. Two sandstone mounds are located in the southwest and southeast corners of the site. The bedrock surface slopes down from the sandstone mounds in all directions.

Hydrology: The TMSL site lies in the Deer Creek valley, which is the primary drainage way near the site. Deer Creek flows northeast across the northwestern corner of the property, within 230 feet of the northwest corner of the landfilled area. The creek meanders through an extensive emergent wetland located on the northwest portion of the property and joins Lemonweir Creek about one mile east of the site. Deer Creek is classified as a cold water sport fishery (trout stream).

Hydrogeology: Groundwater beneath the site was encountered within the unconsolidated deposits, the landfill waste, and the bedrock. The data collected indicates that the unconsolidated sand and the sandstone bedrock generally function as a single aquifer. The water level data indicate that the groundwater flow is northeast toward Deer Creek and the surrounding wetlands averaging velocities between 0.03 to 0.37 feet/day. The groundwater contribution to Deer Creek appears to be limited to the shallow portion of the aquifer. Deeper flow may occur beneath Deer Creek.

The majority of the landfill appears to be unsaturated. However, investigations showed up to 2 feet of saturated waste at the base of the landfill in some areas. The total thickness of

the waste is approximately 10 - 12 feet. Using the highest water levels measured at the site, U.S. EPA estimates that 19,000 out of the 300,000 cubic yards in the landfill may be saturated. However, seasonal fluctuations in the water table make it difficult to estimate the volume of saturated wastes with any reliability.

The City and the majority of the private well owners obtain their water supply from the Cambrian age sandstone aquifers. The City provides municipal water for all residential properties within the city limits. Residents living outside of the city limits obtain their water supply from private wells except for those persons living in the Sunnyvale Subdivision (immediately south of the landfill), and most residences on Flatter Avenue, northeast of the site, who are serviced by municipal water. There remain seven private wells currently in use within one-half mile of the site. These are located northeast and east of the site. Well logs from the current property owners indicate that several of the wells are screened in the sandstone at depths of 50 to 80 feet.

Ecology: The TMSL site is zoned as conservancy. The areas to the north, east and west are classified as vacant or agricultural. Deer Creek flows northeast across the northwestern corner of the site. The WDNR has recently re-classified Deer Creek from a Class II to a Class I trout habitat. Adjacent woodlands, wetlands, and fields add to the diversity of wildlife habitat in the area. Wildlife species found at the site are typical of an urbanizing rural agriculture area or transients from adjacent habitats.

### **Land and Resource Use**

The historic land use of the site from 1959 to 1977 is as a solid waste landfill owned and operated by the City of Tomah.

Land use surrounding the site is agricultural, suburban residential development, and some small business facilities. Residences north of the landfill (hydrologically side-gradient) have private drinking water wells. Homes south of the landfill and immediately bordering the landfill have City of Tomah municipal water. Residents of Flatter Avenue, down-gradient of the landfill, are predominantly served by municipal water. In 2003, the City offered to run municipal water to all the homes on Flatter Avenue. Two landowners chose to retain their private water supplies, one residence (Johnson) is side-gradient, and one, the Friske residence, is down-gradient. Neither well is considered to be at immediate risk. Both are north of Deer Creek, and to date no volatile organic compounds attributable to the landfill have been detected in monitoring wells north of Deer Creek.

It is anticipated that current land use will continue in the future.

### **History of Contamination**

The City of Tomah ("City" or "Tomah") operated the TMSL as a disposal site from 1959 to 1979, disposing of municipal and industrial wastes on 18 acres located on the southern portion of the site. Wastes were placed in shallow (3 to 8 feet) unlined trenches, which were excavated in the sandy subsoils over the southern half of the site and covered with native soils.

In August 1975, the Wisconsin Department Natural Resources (WDNR) ordered the City

to close the site because of potential degradation of local groundwater quality. The City closed the site in 1979, covered it with soil and topsoil, and planted grass and trees on the site.

In June 1981, Union Camp Corporation submitted a Notification of Hazardous Waste Activity for a facility in Tomah. The company reported that from 1960 to 1977, it had disposed of 75,700 gallons of solvent waste from plastics and printing operations at the TMSL. These wastes contained volatile organic compounds (VOCs) and heavy metals.

In December 1983, representatives of the WDNR conducted a Potential Hazardous Waste Site Preliminary Assessment for the TMSL. The WDNR assessment indicated that the landfill represented a potential hazard to groundwater and surface water, and that there could be other migration pathways.

In June 1984, the WDNR and the consulting firm Ecology and Environment, under authorization of the U.S. EPA, conducted a site inspection. A groundwater sample from a downgradient monitoring well contained organic contamination above the levels of health concern. Based on this and other findings, WDNR nominated the site for inclusion on U.S. EPA's National Priorities List (NPL) on April 3, 1985. The site was subsequently added to the NPL on March 31, 1989.

### **Initial Response**

In February 1992, U.S. EPA's Technical Assistance Team (TAT) sampled nine residential wells in the Sunnyvale Subdivision adjacent to the TMSL. One residential well contained elevated levels of vinyl chloride.

In 1993, the City provided municipal water to homes in the Sunnyvale Subdivision, south of the site, to eliminate the potential hazard posed by the landfill to private drinking wells in the subdivision. The private wells were subsequently abandoned.

Research to identify parties responsible for conditions at the TMSL was completed early in 1993. U.S. EPA identified three potentially responsible parties (PRPs): the City of Tomah as owner and operator of the landfill; and Union Camp Corporation (now International Paper Company) and the Veterans Hospital as generators of hazardous substances disposed of at the site. U.S. EPA sent a special notice letter to the PRPs in July 1993, to conduct a Remedial Investigation/Feasibility Study (RI/FS) with oversight by the U.S. EPA. On January 11, 1994, an Administrative Order on Consent (AOC) was entered into voluntarily by the PRPs to conduct the RI/FS at the TMSL site.

In July 1996, the PRPs installed an active gas extraction system along the southern boundary of the landfill to address landfill gas migrating off-site.

## **Basis for Taking Action**

### **Remedial Investigation/Feasibility Study**

On January 11, 1994, an Administrative Order on Consent (AOC) was entered into voluntarily by the PRPs to conduct the RI/FS at the TMSL site. The phase I and II RI included sampling and analyses of groundwater, landfill gas, surface water and sediment. Groundwater samples were collected from monitoring wells (12 wells in Phase I and 19 wells in Phase II) and nearby water supply wells.

Monitoring wells were constructed with screens at three different vertical intervals. A-horizon wells are screened to intercept the water table. Monitoring wells in the B-horizon are generally screened at approximately 20 to 30 feet below the water table. The deepest monitoring wells are the C-horizon wells, which are generally screened from approximately 50 to 60 feet below the water table. Vinyl chloride, a major contaminant of concern, was observed to be present over a larger area in the B- and C-horizon wells than in the A-horizon wells. The highest concentration of vinyl chloride observed was 1200 parts per billion (ppb) in MW-7A, located near the eastern waste boundary.

Landfill gas samples were collected from gas probes in and around the landfill and near residences south of the landfill to determine if landfill gases had migrated beyond the limits of the waste and the site boundary. Methane concentrations were found to range from four to 71 percent by volume. Methane observed in off-site gas probes indicated off-site migration of landfill gas. Gas samples were also analyzed and found to contain VOCs, including vinyl chloride.

Surface water and sediment samples were collected in Deer Creek and the wetlands north of the landfill. No VOCs or semi-volatile organic compounds (SVOCs) were detected in surface water samples. Inorganic substances were found both in upstream and downstream sample locations. The data collected does not indicate impact by the TMSL on surface water or sediment.

Test pits were performed to determine the boundaries of the waste.

Results of the OU-1 investigation were reported in the *Remedial Investigation Report for Source Control, Final Report*, by Dames & Moore, dated July 15, 1996

### **Contaminants**

The major contaminants of concern identified in the OU1-Source Control Record of Decision (ROD) include

Gases:

- Methane
- Vinyl chloride
- 1,2-dichloroethene
- 1,1,1-trichloroethane
- Toluene
- Trichloroethene

Groundwater:



Chloroethane  
1,1-dichloroethane  
1,2-dichloroethene (cis and trans)  
1,2-dichloropropane  
1,2-dichloroethane  
Vinyl chloride  
Benzene  
Toluene  
Ethylbenzene  
Xylenes  
Chlorobenzene  
Bis(2-ethylhexyl) phthalate  
Aluminum  
Iron  
Manganese  
Thallium  
Cadmium  
Chromium

### **Risk Assessment**

U.S. EPA used the data collected during the OU-1 RI to assess human health and ecological risks. This assessment compared contamination levels at the site with U.S. EPA standards. In addition, further assessment of conditions at the site compared contamination levels at the site with Wis. Admin. Ode Ch NR 140 (1996) , Groundwater Standards. The assessment considered ways in which people and wildlife could be exposed to site-related contaminants and whether such exposure could increase the incidence of cancer and noncarcinogenic diseases above the levels that normally occur in the study area.

In general, the major portion of the predicted potential health impacts were associated with exposure to contaminants in groundwater. Dermal exposures to contaminants in the surface water and sediment resulted in excess lifetime cancer risks below  $1 \times 10^{-6}$  and hazard indices below 1. Contaminants in groundwater were evaluated for residential ingestion, inhalation and dermal exposures. The total excess lifetime cancer risk for adult residents was  $3 \times 10^{-2}$ , while that for children is  $1 \times 10^{-2}$ . The hazard index for adult residents was 139 and for child residents, 325. Ingestion of groundwater contaminants (i.e., vinyl chloride) resulted in the majority of the excess cancer risk and non-cancer hazard.

The total overall risk for adults using the groundwater and utilizing the wetlands for recreational purposes is  $3 \times 10^{-2}$ , while that for children is  $1 \times 10^{-2}$ . The risk is primarily due to the presence of vinyl chloride in groundwater.

At the time of the risk assessment, a source control action (capping) had been proposed, therefore risks due to contact with soil or waste were not quantified.

Regarding landfill gas, including VOCs, due to lack of QA/QC documentation for landfill gas samples, a quantitative risk assessment was not undertaken. However, comparison of gas data with groundwater data would lead to an estimation of a similar excess cancer risk due to inhalation of landfill gas.

An ecological risk assessment was conducted to estimate risks to terrestrial and aquatic organisms. Terrestrial organisms are considered to not be at risk, while comparison of data to benchmarks and standards indicated a potential risk to aquatic organisms from cobalt and manganese. Actual damage to the ecosystem of Deer Creek and the surrounding wetlands was not observed, and ecological effects from the TMSL are considered insignificant.

Remedial investigation of the OU-2 Groundwater portion of the work included sampling of groundwater monitoring wells and a vertical aquifer sampling (VAS) program. In addition to the required groundwater sampling to demonstrate effectiveness of the OU-1 remedy, four quarters of groundwater samples were collected from 29 monitoring wells and analyzed for VOCs and natural attenuation geo-chemical parameters that provide evidence of attenuation processes.

To provide further delineation of the groundwater plume, during the latter half of 2003, a vertical aquifer sampling (VAS) program that included eight borings with groundwater samples collected at 10 foot vertical intervals and analyzed for VOCs was conducted. The boreholes were located, to the extent that field conditions allowed, in lines parallel and perpendicular to the centerline of the contaminant plume. Based on analytical results from monitoring wells and the VAS boreholes the vinyl chloride plume appears to extend 1700 feet northeast from the eastern boundary of the waste and to be 1500 feet wide at its greatest width. See Figure 3 in Attachment 1. Vinyl chloride was detected as deep as 142 feet below ground surface. OU-2 investigation activities and results were reported on in the feasibility study report.

In addition to the contaminants listed above, the OU-2-Groundwater ROD, based on additional groundwater monitoring from an expanded monitoring well network, identified arsenic and vanadium as chemicals of concern.

No risk assessment was performed for the OU-2 investigation as the OU-1 assessment was considered to be adequately conservative and protective.

### **Feasibility Studies**

The OU-1 Source Control feasibility study considered eight alternatives. Dames & Moore, under contract to the PRPs submitted the *Feasibility Study for Source Control: Final (Revised) Draft Report* on April 14, 1997. The report was approved by the U.S. EPA with modifications on July 15, 1997.

The OU-2 Groundwater feasibility study by Conestoga Rovers Associates, under contract to the PRPs, was submitted in April 2003. It summarized and evaluated additional groundwater sampling results from an expanded monitoring well network, including geo-chemical parameters that provide secondary evidence of natural attenuation processes in the aquifer. The VAS program was also reported on. Data gathered provides evidence of on-going natural attenuation processes in the groundwater.

## **IV. Remedial Actions**

### **OU-1 Remedy Selection**

The OU-1 Source Control ROD for the Tomah Municipal Sanitary Landfill Site was signed on September 25, 1997. The ROD selected the following remedy:

1. A landfill cap which meets the requirements of Chapter NR 504.07 (1996) of the Wisconsin Administrative Code (WAC)
2. Expansion of the previously existing active gas extraction system and condensate collection system.
3. Groundwater monitoring to verify the effectiveness of the source control remedy.

Threshold criteria for selection of a CERCLA remedy include:

- Overall protection of human health and the environment, and
- Compliance with applicable or relevant and appropriate requirements (ARARs)

Site-specific remedial action objectives (RAOs) for the source control remedy were identified in the ROD as:

- Prevent landfill gas migration such that at no time shall the standard concentration of explosive gas in the soils outside the limits of waste, or air within 200 feet of or beyond the landfill property boundary exceed the lower explosive limit (LEL) for such gases, in accordance with Wis. Admin. Code Ch. NR506 (1966), Landfill Operational Criteria. Chapter NR 506 (1996) requires that all waste disposal facilities have an effective means for controlling landfill gas migration such that the concentration of explosive gases at or beyond the property does not exceed the LEL.
- Prevent blower emission exceedances above standards for the interim and permanent landfill gas extraction system set forth in Wis. Admin. Code Ch. NR 445 (1996).
- Provide an effective means to reduce infiltration through the landfill waste.
- Eliminate contaminant migration pathways to the groundwater, by providing a mechanism to reduce VOC and metals contamination, thereby providing a potential means to meet State groundwater standards within the aquifer affected by contaminants associated with the landfill.

Cap construction selected by the ROD consists of the following (from ground surface down):

- A six-inch thick vegetative topsoil layer;
- A 30-inch thick common fill layer (rooting zone);
- A drainage layer to reduce infiltration into the low permeability layers;
- A 40-mil thick linear low density polyethylene (LLDPE) flexible membrane liner (FML) for the primary impermeable layer; and
- A geocomposite clay liner (GCL) to provide a secondary impermeable layer.

The cap is intended to reduce infiltration through the waste and reduce migration of contaminants to the groundwater.

To address the threats due to landfill gas, an expanded active gas control system was required to extract gas over the entire landfill. The system was required to include the already existing gas extraction system (installed as an interim measure in 1996 ), as well as additional gas extraction wells to control gas from the entire landfill area and perimeter. The gas extraction

system meets the RAOs by controlling migration of landfill gases, and removing contaminants that otherwise might migrate to groundwater. Monitoring of the gas system prevents blower emission exceedances of WAC NR445

Additionally, the OU-1 ROD requires long-term maintenance and monitoring of the *groundwater and landfill gas*.

The OU-1 ROD also stated that this operable unit would be the first of two planned operable units.

### **OU-2 Remedy Selection**

Following submittal of the feasibility study for OU-2, EPA issued an approval on May 19, 2003. The OU-2 Groundwater ROD was signed September 24, 2003. The ROD selected the following remedy:

- Monitored natural attenuation with contingency actions; and
- Institutional controls.

The RAOs for OU-2 are:

- Protect human health and the environment from exposure to contaminated groundwater;
- Protect existing and future residential water supplies from potential migration of VOC impacted groundwater; and
- Reduce contaminant concentrations in groundwater to meet state groundwater standards within the aquifer in a reasonable time frame.

Monitored Natural Attenuation (MNA), relies on natural process (i.e., biodegradation, dispersion, dilution, sorption, volatilization, transformation or destruction) to achieve the remediation objectives. Groundwater samples from existing and newly constructed monitoring wells will be analyzed for natural attenuation parameters in addition to the previously approved (July 2, 2001) monitoring parameters (VOCs and metals). To be considered adequately effective, it will be necessary for the data to demonstrate that the MNA remedy is performing to reduce contaminant concentrations, that the plume is shrinking, and that drinking water standards will be achieved in a reasonable period of time, projected to be 40 to 50 years. The predicted cleanup time frame is 40 to 50 years.

Possible contingency actions include:

- Collecting groundwater samples more frequently;
- Installing additional monitoring wells; and
- Implementing additional response actions, such as, a groundwater containment or treatment system.

Groundwater cleanup levels are based on WAC NR140 preventive action limits (PALs)

Institutional controls in the form of restrictive covenants are required to minimize future human exposure to impacted groundwater. Restrictive covenants prohibiting groundwater from being used as a drinking water source and prohibiting the installation of new supply wells will be recorded on deeds for properties overlying the contaminant plume.

The selected remedy meets the threshold criteria of protection of human health and compliance with ARARs by preventing exposure to contaminated groundwater and requiring monitoring and evaluation to ensure eventual achievement of groundwater cleanup levels. The monitoring will also ensure that negative impact to Deer Creek is prevented. It is also anticipated that the site-specific RAOs will be met. Groundwater sampling and restrictive covenants to prevent supply well construction in the contaminant plume will ensure attainment of the site-specific RAOs.

## **Remedy Implementation**

International Paper (IP), a PRP, conducted overall management of technical and legal activities. CRA, under contract to IP, was the principal contractor and supervised and directed the implementation of the remedial design. WDNR provided oversight to ensure compliance with state regulations, and served as field oversight representative for U.S. EPA, the lead agency. The general contractor for construction was Environmental Contractors of Illinois (ECI).

CRA developed the remedial design, and submitted the final design report in September 1999. The Final Design Report was approved by the U.S. EPA on March 10, 2000. In general, the OU-1 Remedial Actions were constructed and documented in accordance with the approved plans and specifications. Work was conducted under the guidance of a site-specific Health and Safety Plan developed to meet federal worker safety requirements. OU-1 Source Control construction began in April 2000 and was completed August 2000.

Construction began April 2000, with tree clearing, rough grading, and relocation of some waste. Waste from along the southern and western edges of the landfill was moved to an area of the landfill that required filling to bring it up to rough grade elevation. Gas probes (GP-1 to GP-7) within the boundaries of the waste were abandoned and new gas probes were installed starting in May 2000. Gas probes GP-18 to GP-22 were installed off-site to monitor for the lateral migration of landfill gases to off-site receptors.

Other activities initiated in May 2000 included construction of gas extraction wells, gas header system construction, toe drain installation and new blower building construction. The gas extraction system is designed to operate continuously. New gas extraction wells, EW-10- to EW-20 were constructed of six-inch diameter schedule 80 PVC, in accordance with WAC NR507. The risers of the previously existing gas extraction wells were raised to accommodate the change in final elevation.

The gas header system is constructed beneath the cap, mainly of six-inch diameter HDPE pipe in a ring layout. Piping that extends outside the waste limits is double walled. Two sumps (one installed in 1996 and one added in 2002) collect condensate from the gas extraction system. The blower from the previously existing gas extraction system was moved into the new blower building and hooked up to the system. A second blower was also placed in the building for use in the case of failure of the first blower.

Cap construction began the latter part of May, continued through June, and substantially concluded in July 2000 with seeding and mulching. The cap was designed to meet the substantive requirements of WAC NR 504, and consists of (from ground surface down):

- A six-inch thick vegetative topsoil layer;
- A 30-inch thick common fill layer (rooting zone);
- A drainage layer to reduce infiltration into the low permeability layers;
- A 40-mil thick linear low density polyethylene (LLDPE) flexible membrane liner (FML) for the primary impermeable layer; and
- A geocomposite clay liner (GCL) to provide a secondary impermeable layer.

Post-construction topography of the landfill was intended to drain approximately 18 acres to the north toward Deer Creek. The remaining two acres were intended to drain toward Flame Avenue. In response to concerns raised by residents of Flame Avenue, the berm between the residences and the landfill was raised.

Several deviations from design have been noted:

- The location of EW-14 was changed to 50 feet west of the design location because the initial boring for EW-14 found only two feet of waste.
- The configuration of the southern berm was modified to prevent run-off towards the Sunnydale subdivision.
- The gas extraction system was intended to create a vacuum of 10 inches water column at the most distal well; however, the average vacuum at EW-5 was 6.2 inches.

The full-scale gas extraction system was started on July 11, 2000. Subsequently, during construction, the system was temporarily shut down or the vacuum breached to install pumps, floats and switches, and during testing of the control/communications system.

In July 2000, four groundwater monitoring well nests were added to the already existing thirteen well nests. The purpose was to help characterize the contaminant plume down-gradient of the site and verify effectiveness of the source control remedy in reducing contaminant discharge to the groundwater.

Regarding implementation of the OU-2 Groundwater remedy, the Consent Decree was signed by U.S. EPA on September 30, 2004. The consent decree arrived at between the PRPs and U.S. EPA was lodged with the United States District Court for the Western District of Wisconsin. The workplan for the design and implementation of the OU-2 remedy is due 30 days after entry of the consent decree. The workplan shall include plans and schedules for the completion of design, construction, monitoring, reporting, and implementation of institutional controls.

### **System Operation/Operation and Maintenance**

The PRPs have contracted with CRA to perform site operation and maintenance (O&M). The work is being conducted in accordance with the O&M Plan.

During the long-term remedial actions at the site, O&M requirements for the site's OU-1 Remedy include:

1. Annual mowing the final cover system;
2. Quarterly inspection of the landfill cover
3. Quarterly inspection & maintenance of the gas probes, gas extraction wells, valve chambers, blower building, blower unit, condensate collection system.
4. Quarterly inspection of swales, outfalls and culverts; entrance gates, fencing and signs, access road
5. Survey settlement markers annually
6. Quarterly testing of interstitial space in condensate tank
7. Test pressure switch monthly
8. Replace blower bearings every 15 – 20K operating hours.
9. Routine gas extraction system sampling, at the extraction wells, gas probes and blower exhaust.
10. Routine sampling of groundwater monitoring wells and residential water supply wells.

Table 2 presents a comparison of estimated and actual annual O&M expenditures for the OU-1 remedy. This information was furnished by CRA.

**Table 2. Comparison of estimated and actual annual O&M costs.**

O&M Period	Estimated Budget	Expended Budget	Comments
8/00-8/01	\$133,356	\$160,745	Difference due to weekly gas monitoring, which was not part of the original P.O.
9/01-8/02	152,422	144,030	
9/02-8/03	152,422	116,690	
9/03-8/04	152,422	144,760	Berm at south edge of landfill constructed in Spring 2004

Specific O&M requirements for the OU-2 Groundwater remedy have not been established yet.

## V. Progress Since the Last Five-Year Review

This is the first five-year review for the site.

## **VI. Five-Year Review Process**

### **Administrative Components**

WDNR and U.S. EPA staff met with representatives of the City of Tomah and International Paper on November 17, 2004 to notify them of the initiation of the first five-year review. This five-year review for the Tomah Municipal Sanitary Landfill Superfund Site was conducted by Eileen Kramer of the WDNR.

From November 1, 2004 to March 21, 2005, the reviewer established a review schedule, which included:

- Community Involvement;
- Document and Data Review;
- Site Inspection;
- Local Interviews; and
- Five-Year Review Report Development and Review.

### **Community Involvement**

Activities to involve the community in the five-year review included a public notice prepared by the U.S. EPA and published in three local newspapers that a five-year review was to be conducted at the Tomah Municipal Sanitary Landfill Site. The notice contained a brief summary of the site activities, the 5-year review process and a solicitation for public comment. The notice invited members of the public to submit any comments to the reviewer at WDNR. The notice appeared in *The Foxy Shopper* (11/22/04), *The Tomah Monitor Herald* (11/15/04), and *The Tomah Journal* (11/25/04). No comments concerning the Tomah Sanitary Municipal Landfill or the 5-year review process were received during this period.

Interviews with members of the public who reside near the site were conducted. Other interviews included a City of Tomah official, a WDNR construction oversight representative, and the site manager for the PRP's contractor. None of the interviews revealed any significant concerns.

### **Document Review**

This five-year review included a review of relevant documents including the RODs for the OU-1 and OU-2 remedies, operations and maintenance (O&M) records, and monitoring data (See Attachment 3). Applicable groundwater cleanup standards were reviewed.

### **Data Review**

#### Gas Extraction System

The gas extraction system includes 20 gas extraction wells and is intended to capture landfill



gas across the landfill. Gas monitoring probes include five on-site probes and 11 probes on neighboring properties, and are intended to monitor for potential sub-surface migration of landfill gases to off-site receptors. Both extraction wells and probes are monitored monthly by CRA. Table 3 summarizes concentrations of methane, benzene and several chlorinated VOCs at the blower discharge.

**Table 3. Gas Extraction System Blower Discharge Concentrations**

Substance	Vinyl Chloride	Cis 1,2 DCE	Trichloro-ethene	Tetrachloro-ethene	Benzene	Methane
Units	Mg/m <sup>3</sup>	Mg/m <sup>3</sup>	Mg/m <sup>3</sup>	Mg/m <sup>3</sup>	Mg/m <sup>3</sup>	%volume
11/2000	4.42	0.77	0.28	0.49	0.28	3.6
2/2001	4.16	0.48	0.16	0.35	0.12	1.5
5/2001	3.12	0.48	0.20	0.38	0.16	2.1
8/2001	9.10	1.09	0.20	0.54	0.42	6.6
2/2002	3.12	0.20	0.06	0.19	0.14	1.6
8/2002	7.80	0.40	Not Detected	0.39	0.32	5.4
2/2003	2.47	0.03	Not Detected	0.14	0.07	1.9
8/2003	1.82	0.10	0.05	0.21	0.10	2.9
2/2004	1.69	0.05	0.03	0.12	0.07	1.5
8/2004	3.12	0.15	0.07	0.26	0.15	2.9

CRA estimates that as of August 2004, the gas extraction system has removed 98 pounds of vinyl chloride and four pounds of benzene from the landfill since September 2000. This removal potentially reduces the contaminant loading to the groundwater from the landfill and promotes the remediation process.

The monthly monitoring of the gas probes measures percent methane, oxygen and carbon dioxide, and is intended to provide early warning of off-site migration of methane. Since completion of the landfill cap and expanded gas extraction system in August 2000, 15 gas probes have been monitored monthly. There have been 16 instances of methane detects, each time at less than 1%. Most methane detects have been 0.1 or 0.2 percent, well below the 5 percent action level. For the overwhelming majority of gas probe samples (approximately 750 samples), methane has not been detected, demonstrating the effectiveness of the gas extraction system at controlling potential migration of explosive landfill gas.

#### Ground Water Monitoring

Existing groundwater monitoring wells have been constructed at the site starting in 1994. Currently there are 17 groundwater monitoring well locations at the site. There are single well locations, two-well nests, and three-well nests. Sampling is currently conducted to verify the effectiveness of the source control remedy. The electronic database maintained by the

Wisconsin Department of Natural Resources entitled Groundwater and Environmental Monitoring System was used to evaluate the groundwater conditions. This database contains historical as well as recent monitoring results, required by the Record of Decision, which have been collected by both site personnel and state agencies.

July 2, 2001, EPA and DNR approved revisions to the groundwater monitoring plan based upon an evaluation of the first four quarters of data following cap construction. The current plan calls for quarterly monitoring of "core" wells that monitor the contaminants discharging from the landfill; semi-annual sampling of "boundary" wells to monitor the periphery of the plume; and annual sampling of "sentry" wells, which includes background wells. In addition, several nearby private water supply wells are sampled annually.

In addition, from November 2001 to August 2002, the groundwater sampling program was modified to investigate the potential for monitored natural attenuation of the contaminant plume. Four quarters of samples were collected from 29 monitoring wells for natural attenuation parameters.

As part of the sampling to evaluate potential OU-2 groundwater remedies, and to further characterize the plume, a vertical aquifer sampling project was undertaken from August to November 2002. The project consisted of eight borings with groundwater samples collected at 10-foot intervals. The borings were placed, to the extent that field conditions would allow, in transects perpendicular to and parallel with the groundwater flow direction. Analytical data indicated VOC contaminants present at greater depths and at higher concentrations than previously observed.

A review of analytical data from monitoring wells at the eastern edge of the source area, the MW-3 nest, MW-7 show decreasing concentrations of both chloride, and vinyl chloride. This tends to provide evidence of reduced discharge of contaminants from the waste to the groundwater, at least partially due to performance of the landfill cap in minimizing infiltration and dissolution.

The MW-14 well nest is located north of Deer Creek down-gradient of the landfill plume. VOCs attributable to the landfill have not been detected in any of the three wells in the nest.

### Surface Water Monitoring

During the Phase 1 remedial investigation, surface water and sediment samples collected from Deer Creek were sampled and analyzed for VOCs and metals. No substances of concern were detected in the surface water. Several substances were detected in sediment samples; however, the same substances were also detected in sediment samples collected upstream of the landfill. In July 2004, to aid in design of the Groundwater OU-2 MNA monitoring well network, surface water was sampled in five locations on Deer Creek, down-gradient of the landfill. These latter samples were collected further east and closer to the down-gradient extent of the groundwater plume than samples collected during the Phase 1 RI. Several VOCs, including vinyl chloride, were detected in the two most downstream surface water samples. Vinyl chloride results were greater than the laboratory detection limit, but less than the quantitation limit. All VOC detects were well below regulatory levels and judged to not be of concern to ecological receptors.

## Institutional Controls

The OU-1 Source Control ROD indicates that state enforceable deed instruments were already in place and that no additional institutional controls were necessary. A review of the documents on file at the Monroe County Register of Deeds office confirmed that a restrictive covenant was added to the deed for the portion of the 40 acre parcel that is north of the landfill. The restrictive covenant runs with the land and prohibits excavation, filling, plowing, and construction. The covenant is enforceable by the Wisconsin Department of Natural Resources (WDNR), and may be changed with the approval of the WDNR. A copy of the pertinent section of the deed is attached to this Review as Attachment 4. Because the Tomah Municipal Sanitary Landfill is an NPL site, the restrictive covenant should be revised to state that it is enforceable by the U.S. EPA as well as the WDNR, and that U.S. EPA approval as well as WDNR approval is required for any change in the restrictions.

Regarding the landfill itself WAC NR504.07 is applicable. (A copy of this portion of WAC is included as part of Attachment 4.) This section of administrative code prohibits activities on landfills that are not compatible with the final cover, such as agricultural activities, construction, excavation and drilling. This section of code is intended to prevent damage to the landfill cap and is unlikely to be changed or eliminated in the foreseeable future, and, as such is protective. However, this control does not have the advantage of being incorporate in the deed to the property, and would not necessarily come to the attention of potential future landowners. To be protective in the long-term a restrictive covenant, running with land, that provides notice that the property is the site of a solid waste landfill and that prohibits activities that harm the integrity of the remedial action, should be drafted and recorded at the Monroe County Register of Deeds office for the landfill itself. At a minimum, the prohibited activities should include excavation, construction, and agricultural activities. The deed should provide that the restrictions are enforceable by both U.S. EPA and WDNR, and can only be lifted with the approval of U.S. EPA and the WDNR.

There is currently no plan for monitoring and enforcing the necessary institutional controls for the OU1 remedy. A plan should be drafted by the PRPs for review and approval by the U.S. EPA and WDNR. The plan should be incorporated into the existing remedy.

The OU-2 Groundwater ROD requires covenants that run with the land to be established for properties which lie over the groundwater contaminant plume. A review of documents on the down-gradient properties indicates that a restrictive covenant has been recorded for the Martin property. This document restricts well construction on the property to only one supply well appropriate for one single-family dwelling. This restrictive covenant is defective in that it does not provide for enforcement by U.S. EPA and WDNR, nor provide for future changes with the approvals of U.S. EPA and WDNR. The document, therefore, needs to be modified. CRA reports that the Ruth Hanson property has a deed instrument recorded that allows the City to run a water supply lateral onto the property. The writer of this report has not read this document, but it does not appear to restrict supply well construction on the property.

WAC, NR812.08(4)(g)1., an applicable or relevant and appropriate requirement (ARAR) is also an institutional control and does not allow extraction wells within 1200 feet of a landfill, without a variance. (A copy of this section of WAC is included in Attachment 4.) Issuance of the variance includes a hydrogeologic review of the setting and frequently requires special well

construction. These requirements serve to protect potential human receptors of contaminated groundwater. While NR812 provides some control within 1200 feet of the landfill, it does not run with the land. Potentially, future property owners could be unaware of the groundwater contamination without a covenant that runs with the land.

There is currently no plan for monitoring and enforcing the necessary institutional controls for the OU2 remedy. A plan should be drafted by the PRPs for review and approval by the U.S. EPA and WDNR. The plan should be incorporated into the remedy.

### **Site Inspection**

A site inspection was conducted on November 17, 2004, by the WDNR Remedial Project Manager (RPM) and the U.S. EPA RPM, accompanied by the site manager, Brian Sandburg of CRA. The purpose of the inspection was to assess the protectiveness of the remedy, including the maintenance and operation of the landfill cap, gas extraction system, fencing, on-site access road, and groundwater monitoring wells.

No significant problems were identified regarding the cap, the gas extraction system, the monitoring network, the on-site access roads, and the perimeter fencing. No areas of cracking or erosion of the cap were noted. Across most of the landfill, the vegetation was dense and vibrant. One area of concern was observed on the southern portion of the cap where the cap had been modified in 2004 to prevent surface water run-off in the direction of the Sunnyvale subdivision. An area approximately 200 feet long by 25 feet wide had very sparse or non-existent grass. According to the site manager, shortly after the cap modification had been completed and seeded, a heavy rainfall event occurred. Re-seeding and mulching should be conducted spring 2005.

Gas extraction wells and gas probes were observed. All appeared to be in good condition. The blower building and mechanical equipment all appeared to be in good condition. The control panel was also secure and in good condition.

Drainage ditches and culverts surrounding the waste mound were clean of debris, and no standing water was observed. The groundwater monitoring wells were all (with one exception) secure, labeled, and in substantially good shape. Site security controls appear to be effective as there was no evidence of unauthorized access to the site (i.e. graffiti, tire tracks, campfires). Fencing around the site was observed to be in good condition with padlocks in use on all gates. Roads were observed to be in good condition.

One off-site monitoring well nest (MW-13 nest) was found to be unlocked and the padlocks missing when CRA personnel arrived at the site at approximately noon on November 16. CRA replaced the padlocks and locked the wells. This is an off-site monitoring well that is sampled quarterly. Several other monitoring wells had broken or cracked inner PVC caps. These should be replaced, preferably with caps of a different design that will not crack and break readily.

A visual reconnaissance of the Sunnyvale properties' backyards and a walk through the small wooded lot on Flame Ave revealed no evidence of recent excessive surface water run-off from the landfill.

The Site Inspection Checklist is included as Attachment 4.

## **Interviews**

Interviews with members of the public who reside near the site were conducted. Other interviews included a City of Tomah official, a WDNR construction oversight representative, and the site manager for the PRP's contractor. None of the interviews revealed any significant concerns. See Attachment 5.

## **VII. Technical Assessment**

### **Question A: Is the remedy functioning as intended by the decision documents?**

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicate that the OU-1 remedy is functioning as intended by the ROD. The capping of wastes within the landfill and landfill gas extraction have achieved the remedial objectives of reducing the migration of contaminants to groundwater and preventing lateral sub-surface migration of landfill gases. Operation and maintenance of the cap and gas extraction system is, on the whole, effective. Concentrations of contaminants in groundwater as measured in monitoring wells at the eastern boundary of the landfill (MW-3 nest and MW-7) are generally observed to be decreasing.

Regarding institutional controls on the landfill, WAC NR504.07 prohibits certain activities on landfill caps such as excavation or drilling. This regulation would be adequately restrictive for the foreseeable future. However, in the distant future, which may not be easily foreseen, property ownership could potentially be transferred to a new owner not familiar with the applicable regulation. Therefore, while the physical remedy has been constructed and is functioning as intended, and existing regulations provide control for the short-term; a restrictive covenant, running with land, that provides notice that the property is the site of a solid waste landfill and that prohibits activities that harm the integrity of the remedial action, should be drafted and recorded at the Monroe County Register of Deeds office for the landfill itself. At a minimum, the prohibited activities should include excavation, construction, and agricultural activities. The deed should provide that the restrictions are enforceable by both U.S. EPA and WDNR, and can only be lifted with the approval of U.S. EPA and the WDNR.

The OU-2 Groundwater remedy is in the design phase at this time. However, groundwater monitoring conducted thus far, indicates that contaminant natural attenuation is occurring at a rate adequate to achieve cleanup goals in a reasonable period of time. The planned enhancement of the monitoring well network will take into account the results of the vertical aquifer sampling project and the observation of low levels of vinyl chloride in Deer Creek. The expanded network will permit more rigorous quantitative evaluation of the MNA processes. The OU-2 ROD calls for a contingency remedy should the MNA remedy prove to not be adequately protective.

The OU-2 ROD requires that institutional controls be implemented on properties affected by the landfill contaminant plume. These controls should include restrictive covenants in the deeds for the affected properties. The covenants must run with the land and prohibit drilling of new water supply wells. They must also provide for enforcement by U.S. EPA and WDNR, and

for changes with the approval of U.S. EPA and WDNR. CRA reports that restrictive covenants have already been recorded for the Martin property, east of the landfill. As noted above, this restrictive covenant is defective in that it does not provide for enforcement and subsequent modification by U.S. EPA and WDNR. The Martin should therefore be corrected. Other properties where contaminated groundwater is observed and which should have restricted groundwater use include, the Pleuss rental property, the Ruth Hanson property, the Tom Pleuss residence, and the Linda Johnson residence.

Nearby residential water supply wells are sampled annually. Since the City provided public water supply to the Sunnyvale subdivision in 1993, contaminants attributable to the landfill have not been detected in any water supply wells. Analytical results from sentry monitoring wells indicate an extremely low probability of landfill impact on nearby water supply wells.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

ARARs that still must be met at this time and that have been evaluated include: Ch. NR 140, Wisconsin Administrative Code (Enforcement Standards and Preventative Action Limits); the Safe Drinking Water Act (SDWA) (40 CFR 141.11-141.16) [Maximum Contaminant Levels (MCLs), and MCL Goals (MCLGs)]; and ARARs related to monitoring, landfill capping, and operation of the gas extraction system. There have been no pertinent changes in ARARs related to the landfill cap or gas extraction system since the OU-1 ROD was signed in September 1997.

Site groundwater cleanup levels in the OU-2 ROD were based on Wisconsin Ch. NR140 (2003) preventive action limits (PALs). There has been one change in NR140 PALs since the OU-2 Groundwater ROD was written in 2003. Based on new toxicity data, arsenic, which previously had a NR140 PAL of 5 parts per billion (ppb), has been revised to a PAL of 1 ppb. Since July 2000, arsenic has not been detected in any of the "core" monitoring well nests (MW-9, MW-12, MW-13, MW-15) which are intended to monitor the status of the plume. It has been observed in the monitoring wells at the eastern margin of the landfill (MW-3 nest, MW-7) at concentrations ranging from 20 to 35 ppb. Given the absence of arsenic in the down-gradient plume, the change in standard does not affect protectiveness of the remedy and a revision of the OU-2 cleanup standard for arsenic is not warranted at this time. Future monitoring should continue to include arsenic and the issue evaluated at the next five year review. Current laboratory detection limits should be discussed with the laboratory to determine if a detection limit can be achieved to meet the new NR140 PAL without significant increase in cost. The current detection limit of 3 ppb while greater than the NR140 PAL, is less than the NR140 enforcement standard.

The exposure assumptions used to develop the Human Health Risk Assessment are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions, or the cleanup levels developed from them is warranted. The remedy is progressing as expected and it is expected that all groundwater cleanup levels will be met within approximately 50 years.

There have been no pertinent changes in federal or State regulations related to the landfill cap or gas extraction system since the OU-1 ROD was signed in September 1997.

Hence, we do not need to determine whether the ARARs for the OU-1 should be altered to reflect newer standards.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

In 2004, sampling of surface water in Deer Creek, indicated very low levels of vinyl chloride were present. Review by WDNR staff who specialize in fish and other aquatic habitat, as well as comparison with regulatory standards for surface water, indicate little likelihood of ecological impact. However, additional investigation of Deer Creek should be performed and results evaluated.

There is no other information generated during the 5-year review process or other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, and the site inspection, the OU-1 remedy is functioning as intended by the ROD. There have been no significant changes in the physical setting of the site that would affect the protectiveness of the remedy. A comparison of groundwater data to NR140 standards and MCLs indicates that exposure to contamination via drinking water is not occurring and measures are in place to prevent this occurrence. There is no information that calls into question the short-term protectiveness of the remedy.

## VIII. Issues

**Table 4 - Issues**

<b>Issues</b>	<b>Affects Current Protective- ness</b>	<b>Affects Future Protective- ness</b>
The observation of vinyl chloride in surface water in Deer Creek.	No	Yes
One Flatter Ave. resident down-gradient of the landfill has chosen to retain a private drinking water well	No	Yes
Vegetation on a 200' long x 25' wide strip at the southern edge of the landfill cap is absent to sparse.	No	Yes
PVC inner caps on several monitoring wells are cracked or broken.	No	Yes
There is no deed restriction on the landfill itself to prohibit excavation, agricultural activities, building, or other activities that would compromise the integrity of the cap.	No	Yes
The restrictive covenant on the northern portion of the city owned parcel north of the landfill does not provide for enforcement or future modification by U.S. EPA	No	Yes
The restrictive covenant on the Martin property does not provide for enforcement or future modification by U.S. EPA or WDNR	No	Yes
Groundwater use restrictions are yet to be recorded on five nearby properties impacted by contaminated groundwater.	No	Yes
There is no plan in place to monitor and enforce institutional controls for OU-1 and OU-2	No	Yes



# **IX. Recommendations and Follow-Up Actions**

**Table 5 – Recommendations and Follow-Up Actions**

Issue	Recommendation	Party Responsible	Over-Sight	Mile-Stone	Affects Protective-ness	
					Current	Future
Surface Water	Surface water in Deer Creek should be further evaluated, including east of observed detects.	PRP Group	U.S. EPA WDNR	11/2005	No	Yes
Private Well Down-Gradient	The down-0gradient private well should be added to the site sampling requirements	PRP Group	U.S. EPA WDNR	5/2005	No	Yes
Vegetation on Cap	The area at the southern edge of the cap should be re-seeded and mulched, and monitored carefully to assure adequate re-vegetation.	PRP Group	U.S. EPA WDNR	11/2005	No	Yes
Monitoring Well Inner Caps	Cracked or broken PVC inner caps on monitoring wells should be replaced.	PRP Group	U.S. EPA WDNR	11/2005	No	Yes
Institutional Control on Land-Fill	Implement an appropriate institutional control to prohibit activities on the landfill that would compromise cap or gas extraction system.	PRP Group	U.S. EPA WDNR	April 2006	No	Yes
Restrictive Covenant on Land North of Landfill	Modify the restrictive covenant to provide for U.S. EPA enforcement and approval for future modifications.	City of Tomah	U.S. EPA WDNR	April 2006	No	Yes
Restrictive Covenant on Martin Property	Modify the restrictive covenant to provide for U.S. EPA and WDNR enforcement and approval for future modifications	PRP Group	U.S. EPA WDNR	April 2006	No	Yes
Groundwater Use Restriction on Five Properties	Draft and record restrictive covenants on five properties that overlie contaminated groundwater restricting future use of groundwater.	PRP Group	U.S. EPA WDNR	April 2006	No	Yes
Monitor and Enforce ICs	Develop plan for monitoring and enforcement of institutional controls.	PRP Group	U.S. EPA WDNR	April 2006	No	Yes

## **X. Protectiveness Statements**

### **OU-1 Source Control**

The remedy at OU-1 currently protects human health and environment because the landfill cap, and gas extraction system continue to function effectively and as intended in the ROD. Access to the site is controlled, and groundwater and nearby residential wells are monitored as required. The gas extraction system is also monitored to verify that landfill gases do not migrate off-site. Observations of methane in off-site gas probes are very infrequent (16 detects out of approximately 750 samples), and are very low concentration, indicating that lateral gas migration is under control. Data indicate removal of contaminant mass from the waste via the gas extraction system. Concentrations of contaminants in groundwater as measured in monitoring wells in immediate proximity to the landfill are declining, providing evidence of decreasing discharge of contaminants from the waste to the groundwater.

However, in order for the remedy to be protective in the long-term, a deed restriction on the landfill should be signed and recorded limiting future activities and uses of the property so that cap integrity is not breached, nor waste exposed.

### **OU-2 Groundwater**

The OU-2 remedy currently protects human health and the environment because groundwater monitoring provides evidence that there is no current exposure, nor immediate threat of such exposure.

However, in order for the remedy to be protective in the long-term, groundwater cleanup goals must be achieved and restrictive covenants on down-gradient properties underlain by contaminated groundwater must be implemented. Also, a plan for monitoring and enforcing institutional controls must be adopted to ensure long-term protectiveness.

### **Site Protectiveness**

Because the remedial actions at OU-1 and OU-2 are protective in the short-term, the site is protective of human health and the environment in the short-term. To be protective in the long-term, the appropriate restrictive covenants must be drafted and recorded, the necessary modifications made to existing restrictive covenants, and a plan to monitor and enforce institutional controls drafted and adopted.

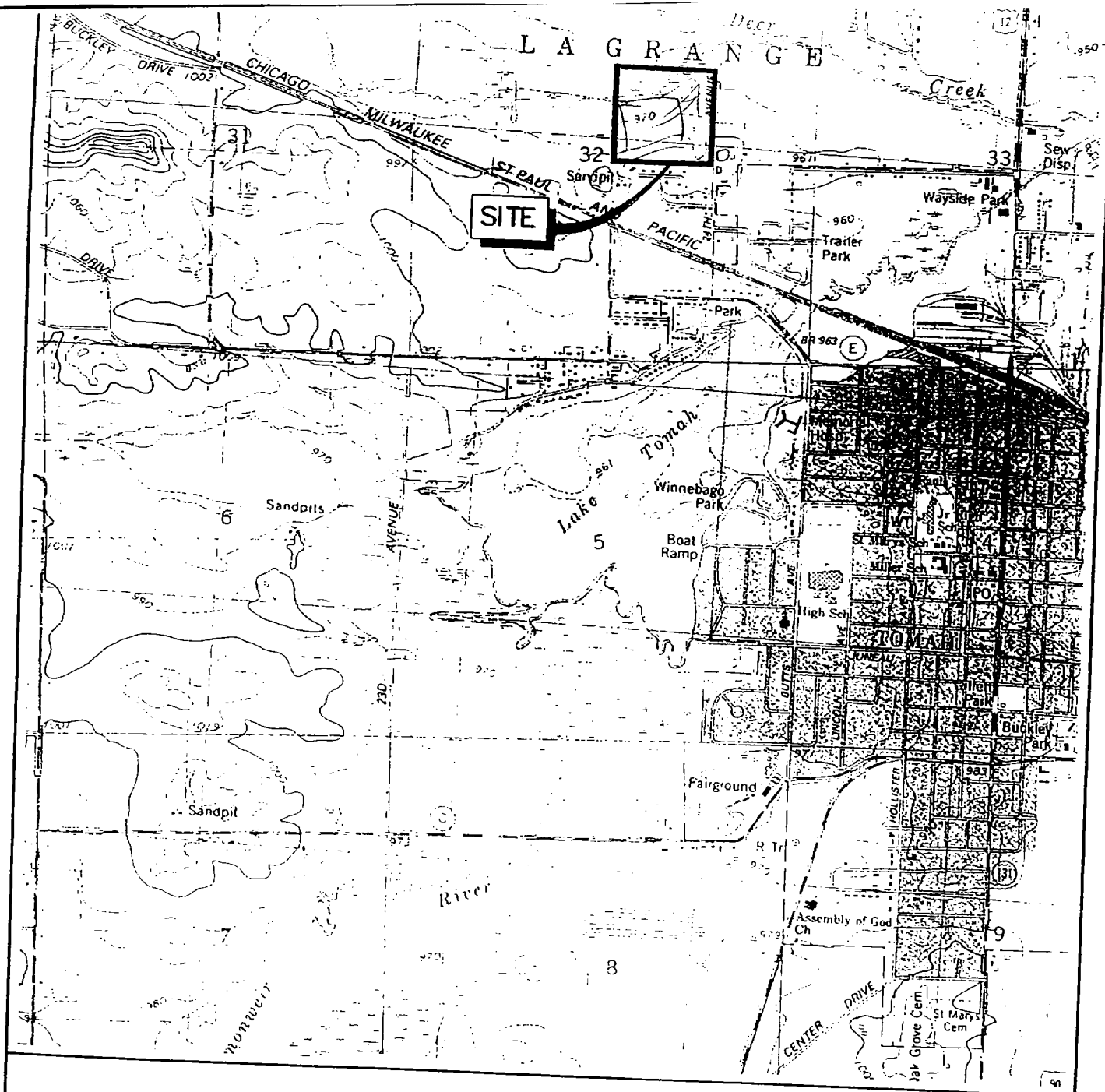
## **XI. Next Review**

The next five-year review for the Tomah Municipal Sanitary Landfill Superfund Site is required by April 2010, five years from the date of this review.

## **ATTACHMENTS**

**Attachment 1**

**Site Maps**



SOURCE: USGS TOPOGRAPHIC MAP  
TOMAH, WIS. QUADRANGLE



0 1000 2000ft

A scale bar with markings for 0, 1000, and 2000 feet.

figure 1

SITE LOCATION  
TOMAH MUNICIPAL SANITARY LANDFILL  
*Tomah, Wisconsin*



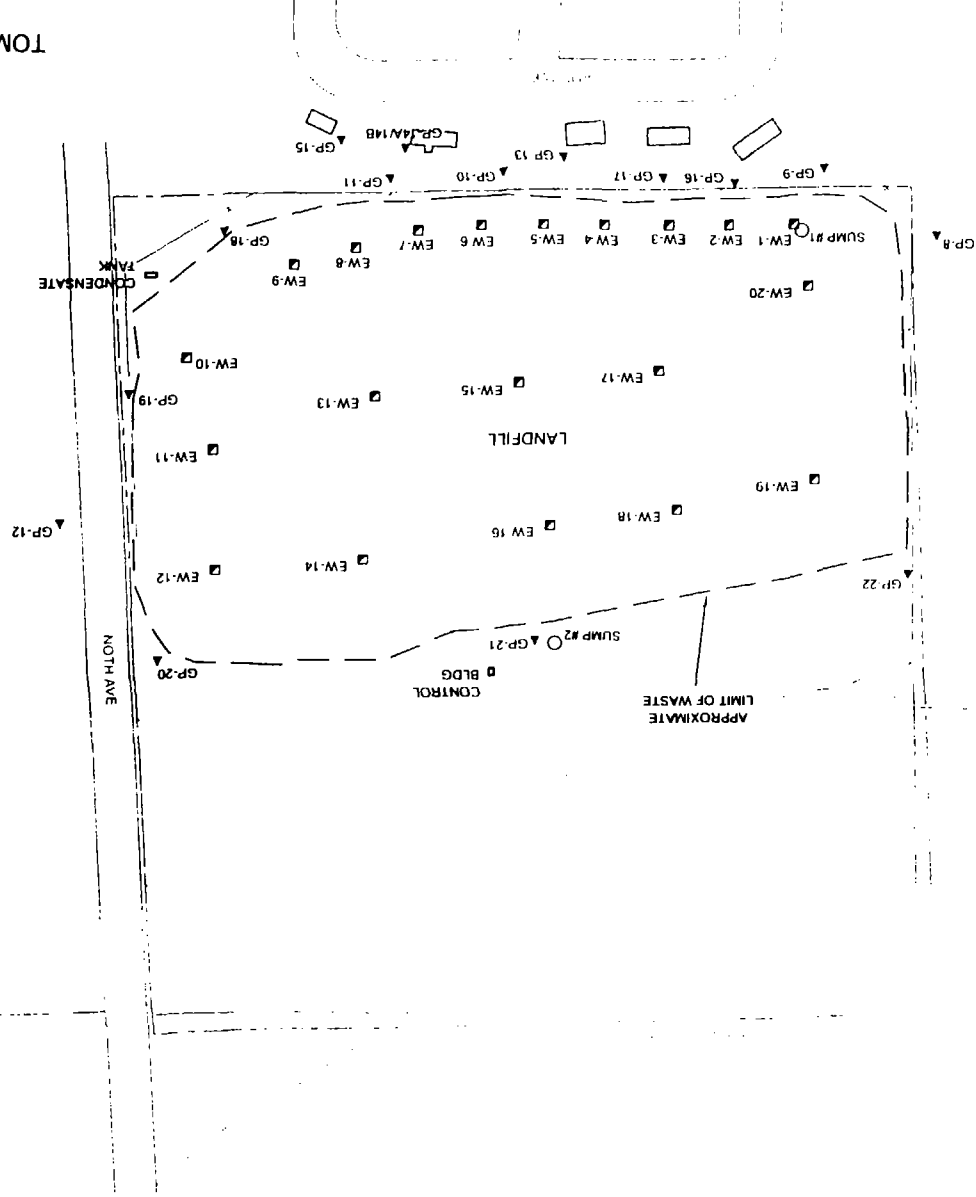
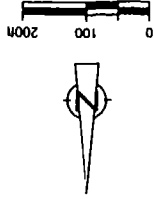
12865-90(037)GN-SP001 JUL 30/2004

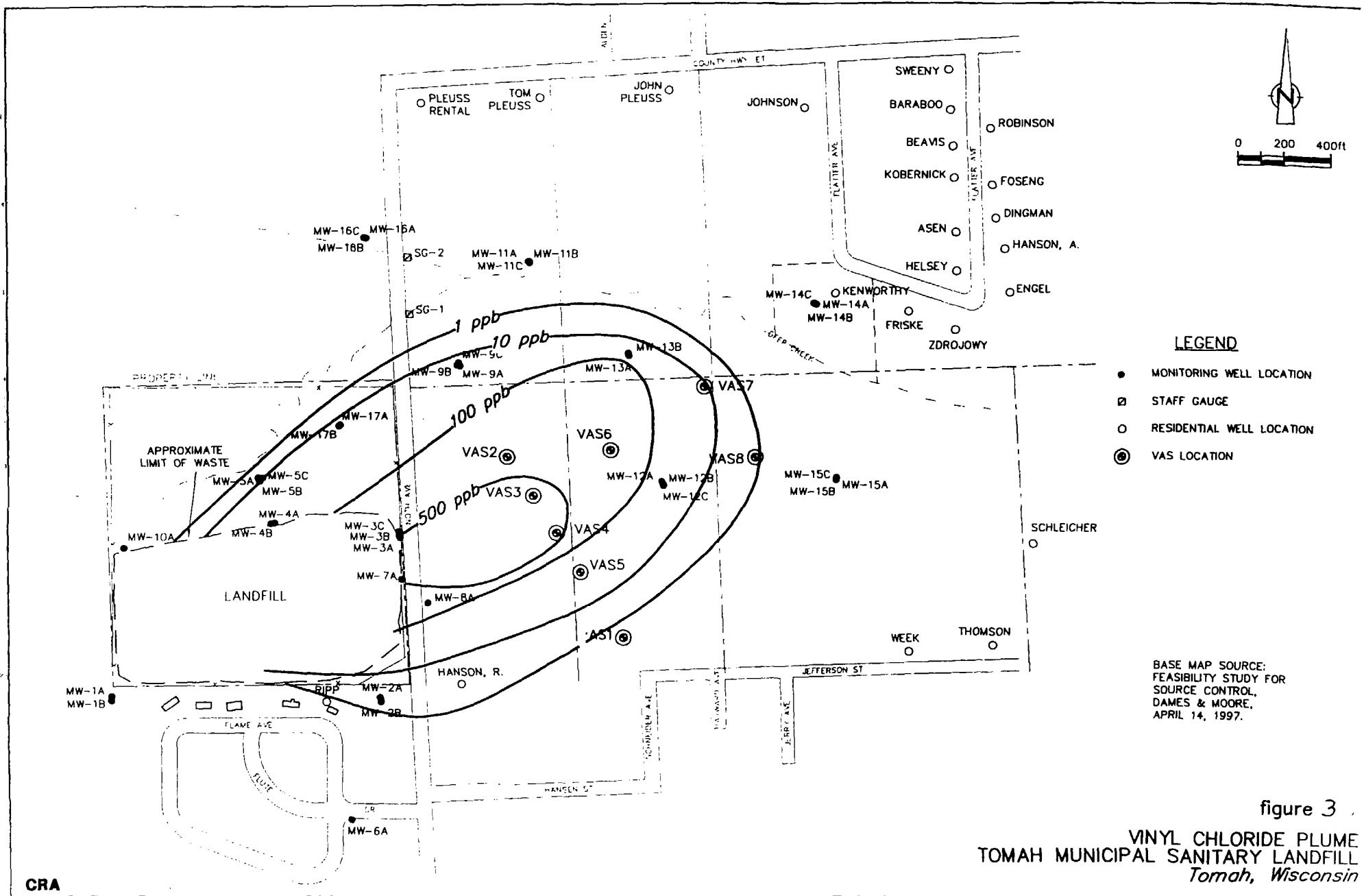
GAS EXTRACTION SYSTEM  
MONITORING LOCATIONS  
TOMAH MUNICIPAL SANITARY LANDFILL  
Tomah, Wisconsin

figure 2

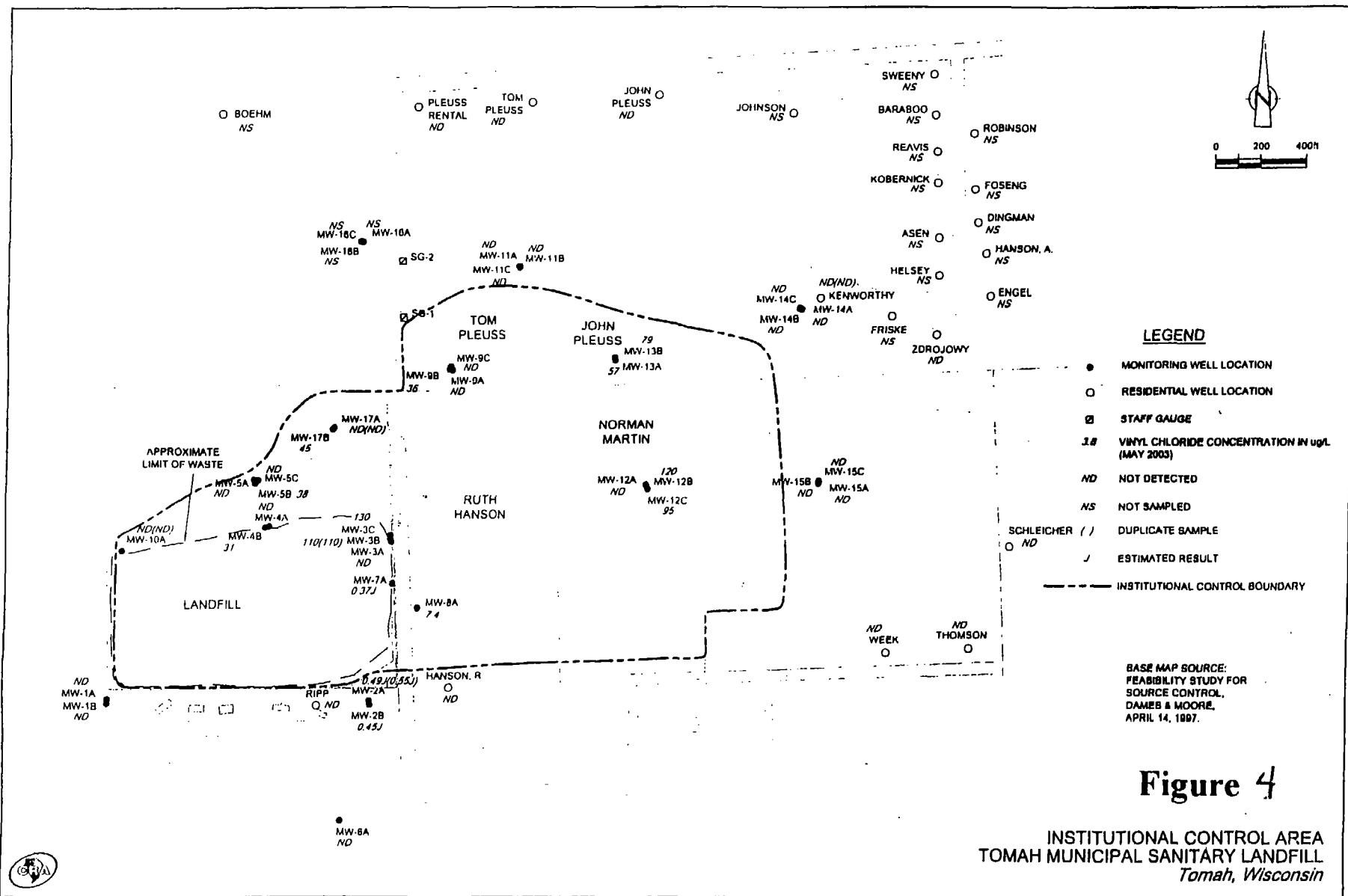
BASE MAP SOURCE:  
FEASIBILITY STUDY FOR  
SOURCE CONTROL,  
DAMES & MOORE,  
APRIL 14, 1997.

**LEGEND**  
▲ GAS PROBE LOCATION  
□ GAS EXTRACTION WELL LOCATION





CRA





**Attachment 2**

**List of Reviewed Documents**

# **Tomah Municipal Sanitary Landfill Superfund Site**

## **Five Year Review**

### **Documents Reviewed**

Remedial Investigation Report for Source Control, Final Report, by Dames & Moore, July 15, 1996

Feasibility Study for Source Control, Final (Revised) Draft Report, by Dames & Moore, April 14, 1997

EPA Record of Decision: Tomah Municipal Sanitary Landfill, OU 1, Tomah, WI, 09/25/1997

Plume Extent Investigation Report, by Conestoga Rovers Associates, October 28, 1999

Final (100%) Design Report, by Conestoga Rovers Associates, February 17, 2000

Completion of Construction Report, by Conestoga Rovers Associates, March 13, 2001

Operation and Maintenance Plan, by Conestoga Rovers Associates, March 13, 2001

Operable Unit 2 Feasibility Study, by Conestoga Rovers Associates, April 30, 2003

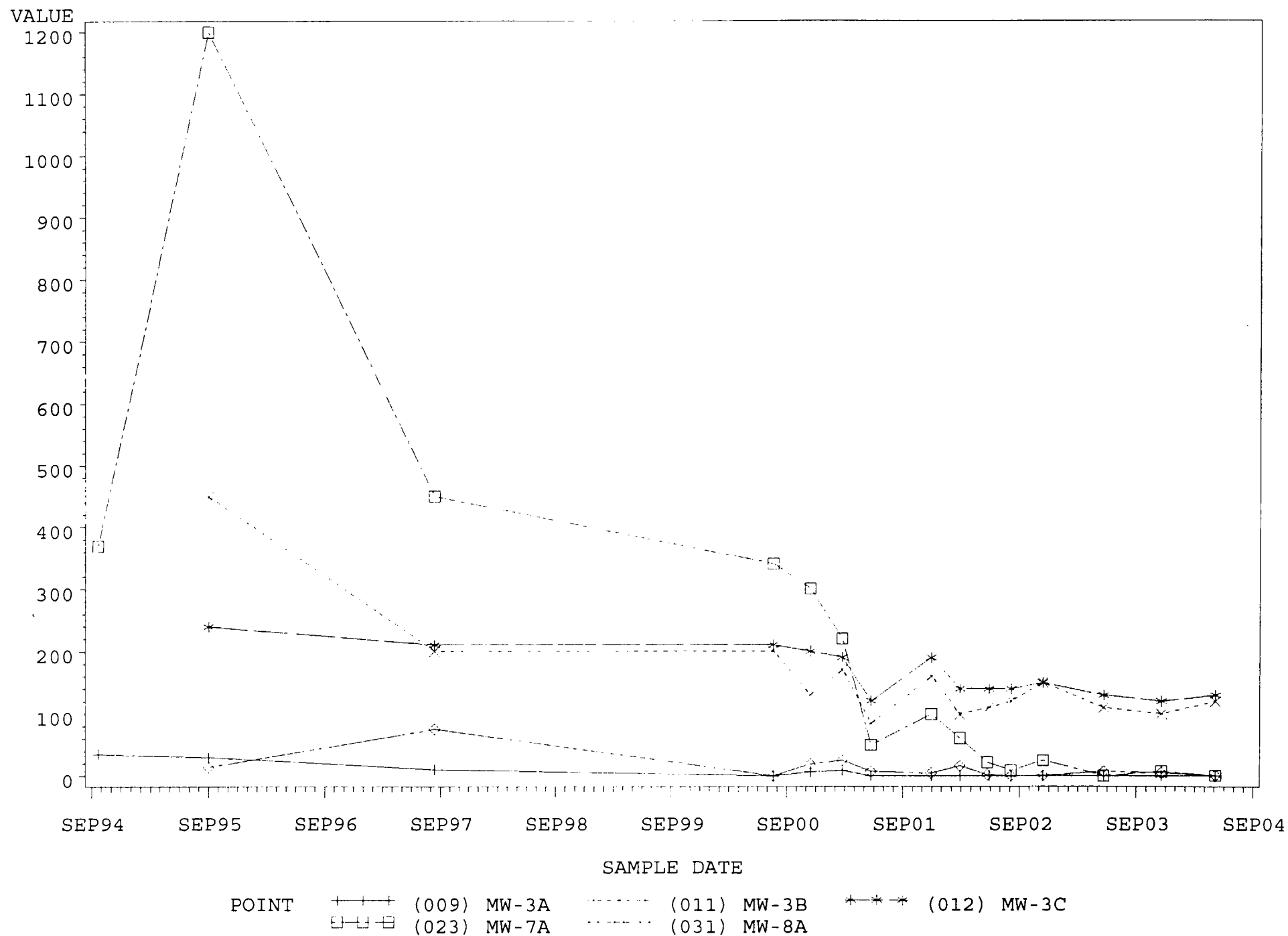
EPA Record of Decision for the Tomah Municipal Sanitary Landfill, Groundwater Operable Unit, OU-2, Tomah, Wisconsin, by Environmental Protection Agency, Region 5, September 24, 2003

Quarterly Monitoring Reports by Conestoga Rovers Associates, from November 2000 to July 2004

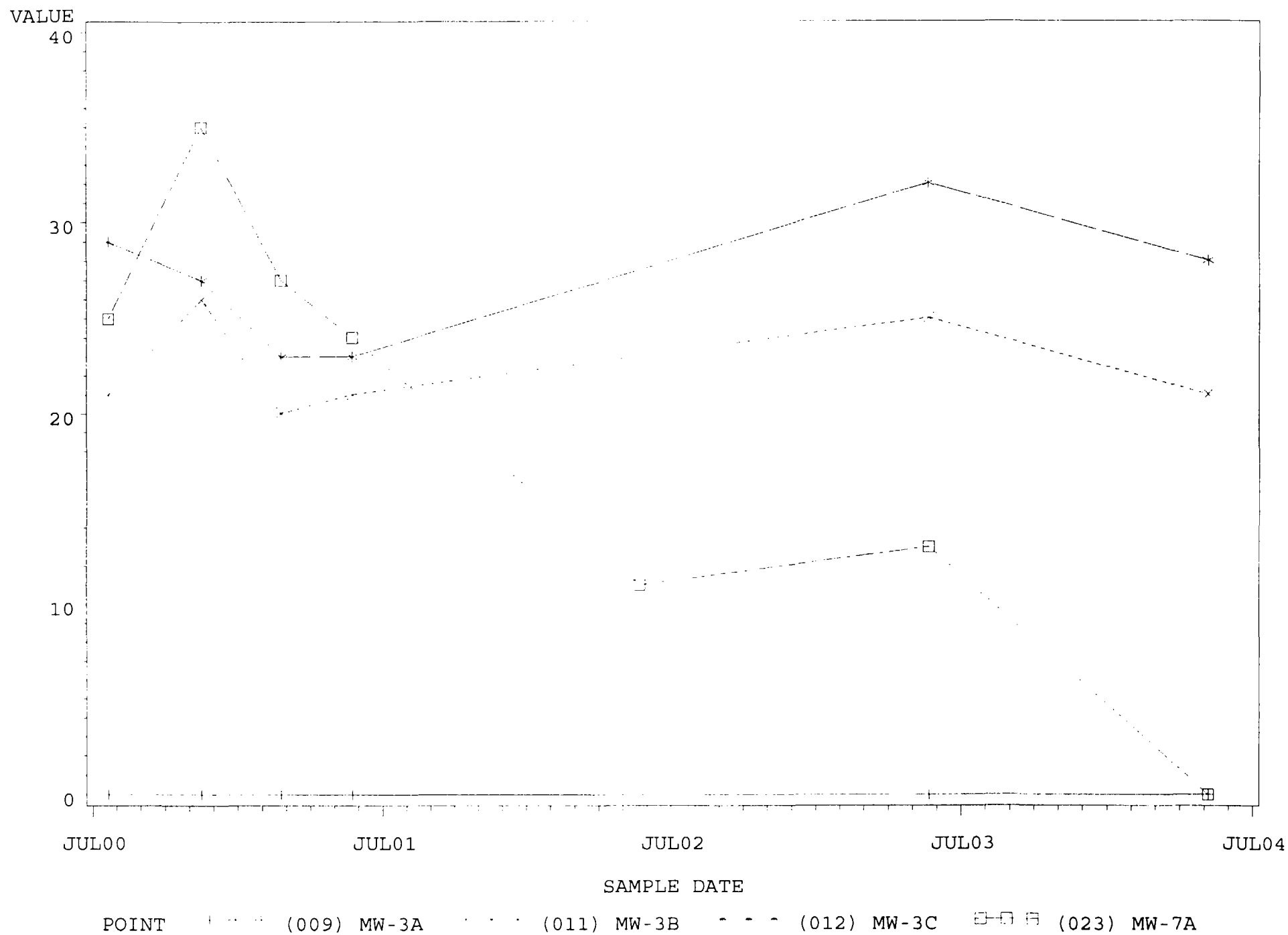
**Attachment 3**

**Monitoring Data**

TOMAH SAN LF ( 184), PARAMETER=39175, VINYL CHLORIDE IN WHOLE WATER,



TOMAH SAN LF ( 184), PARAMETER=' 1002, ARSENIC, TOTAL (UG/L AS),'



WDNR GEMS  
DATA COMPARISON REPORT  
FOR  
ARSENIC  
BENZENE  
TETRACHLOROETHYLENE  
TRICHLOROETHYLENE  
CIS 1,2-DICHLOROETHENE  
VINYL CHLORIDE  
AT SITE MONITORING WELLS

Comment: SELECT PARAMTERS -- FIVE YEAR REVIEW -- 4/20/2005

REPORT OPTIONS:

This report uses site-specific calculated PALs (ACLs) if applicable.

Non-Detects are not included in this report

ES Exceedances apply only at Point of Standards application

-----  
EXCEEDANCES OF GROUNDWATER STANDARDS:

P Attains or Exceeds an NR 140 Preventive Action Limit (PAL), or a calculated site specific PAL (ACL), if applicable

E Attains or Exceeds an NR 140 Enforcement Standard (ES)

J J values (see below) cannot exceed PALs or ESs without confirmation, and therefore are not so labeled. A J-flagged value exceeds a groundwater standard only if the PAL or ES is below the LOD, and the result is confirmed (see s.NR 140.14(3) (b) Wis. Adm. Code.

RESULT QUALIFIERS:

N Parameter was not detected above the limit of detection (LOD). (LOD is defined in s. NR 500.03(125) Wis. Adm. Code.

J Parameter was detected between the LOD and the limit of quantitation (LOQ). (LOQ is defined in s. NR 500.03(126) Wis. Adm. Code.

F The sample failed one or more QA/QC criteria (see s. NR 507.26(3) (b) (4a-c) Wis. Adm. Code)

\*N Parameter was not detected above a reporting limit, or no limit was supplied with the result. (A reporting limit may be a practical quantitation limit (PQL), an estimated quantitation limit (EQL), or an arbitrary number set by the laboratory.)

\*J No LOD was supplied with the sample result. Either a reporting limit was reported, or no limit was supplied. In these cases, the meaning of the J qualifier is uncertain

USE OF QUALIFIED RESULTS IN STATISTICAL PROCEDURES:

N For results flagged with N, one-half the LOD is used in statistical calculations

\*N For results flagged with \*N, one-half a reporting limit, if supplied, is used in statistical calculations. If no limit was supplied, the parameter is not included in sample counts and the value is not used in statistical calculations.

J For results flagged with J, the full value is used in statistical calculations.

\*J For results flagged with \*J, if a reporting limit was supplied the full value is used in statistical calculations. If no limit was supplied, the parameter is not included in sample counts and the value is not used in statistical calculations. Zero or blank values flagged with J or \*J are neither counted nor used in statistical calculations.

F Values flagged with F are not included in statistical calculations or in sample counts.

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 1002 ARSENIC(AS)TOTAL

Units: ug/L

	11 MW-3B	12 MW-3C	13 MW-4A	15 MW-4B
PAL	1 (H)	1 (H)	1 (H)	1 (H)
ES	10 (H)	10 (H)	10 (H)	10 (H)
07/21/2000	21 (P)	29 (P)	37 (P)	16 (P)
11/15/2000	26 (P)	27 (P)		
11/16/2000			25 (P)	17 (P)
02/23/2001	20 (P)	23 (P)	17 (P)	16 (P)
05/24/2001	21 (P)	23 (P)		20 (P)
05/23/2002				19 (P)
05/21/2003			3 (J)	28 (P)
05/22/2003	25 (P)	32 (P)		
05/06/2004	21 (E)	28 (E)	7.2 (J)	26 (E)

Mean	22.33333	27	17.84	20.28571
------	----------	----	-------	----------

	17 MW-5A	20 MW-5C	23 MW-7A	43 MW-11B
PAL	1 (H)	1 (H)	1 (H)	1 (H)
ES	10 (H)	10 (H)	10 (H)	10 (H)
07/21/2000			25 (P)	
11/15/2000			35 (P)	
02/23/2001			27 (P)	
05/24/2001			24 (P)	
05/23/2002			11 (P)	
05/21/2003				3.2 (J)
05/22/2003			13 (P)	
05/05/2004	3.6 (J)	4.6 (J)		

Mean	3.6	4.6	22.5	3.2
------	-----	-----	------	-----

	15 MW-11A	77 MW-11B
PAL	1 (H)	1 (H)
ES	10 (H)	10 (H)



West Central Region  
License Number: 184

County: Monroe  
Facility Name: TOMAH SAN LF

Sample Date Range: 01/01/1998 thru 04/01/2005  
FID: 642009720

Parameter: 1002 ARSENIC (AS) TOTAL Units: ug/L (Continued)

	75 MW-17A	77 MW-17B
05/05/2004	3.2 (J)	3.2 (J)
Mean	3.2	3.2

Parameter: 34030 BENZENE Units: ug/L

	11 MW-3B	12 MW-3C	13 MW-4A	15 MW-4B
PAL	.5	.5	.5	.5
ES	5	5	5	5
07/21/2000	26 (E)	34 (E)	8 (E)	9.6 (E)
11/15/2000	21 (E)	32 (E)		
11/16/2000			13 (E)	10 (E)
02/23/2001	33 (E)	35 (E)	11 (E)	9.2 (E)
05/24/2001	24 (E)	27 (E)		8.2 (E)
11/29/2001				9.7 (E)
11/30/2001	29 (E)	36 (E)		
02/26/2002				7.9 (E)
02/27/2002	28 (E)	32 (E)		
05/23/2002			.58 (J)	7.9 (E)
05/29/2002	21 (E)	29 (E)		
08/05/2002				6.8 (E)
08/06/2002	24 (E)	39 (E)		
11/12/2002				6.7 (E)
11/13/2002	23 (E)	31 (E)		
05/21/2003				6.9 (E)
05/22/2003	32 (E)	33 (E)		
11/19/2003	33 (E)	29 (E)		
11/20/2003				6 (E)
05/06/2004	31 (E)	27 (E)		6.1 (E)
Mean	27.08333	32	8.145	7.91667

	17 MW-5A	19 MW-5B	23 MW-7A	33 MW-9A
PAL	.5	.5	.5	.5

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 34030 BENZENE

Units: ug/L

(Continued)

	17 MW-5A	19 MW-5B	23 MW-7A	33 MW-9A
ES	5	5	5	5
07/20/2000	1.4 (P)	8.9 (E)		
07/21/2000			17 (E)	
11/14/2000				.41 (J)
11/15/2000	2.2 (P)	9.2 (E)	25 (E)	
02/21/2001				.37 (J)
02/22/2001	1.2 (P)	9.4 (E)		
02/23/2001			21 (E)	
05/24/2001		6.9 (E)	3.7 (P)	
08/08/2001				1.2 (P)
11/28/2001				.38 (J)
11/29/2001			8.3 (E)	
02/27/2002			6.7 (E)	
05/23/2002		7 (E)	2 (P)	
08/05/2002		6 (E)	.7 (J)	
11/12/2002		5.4 (E)		
11/14/2002			2.7 (P)	
05/21/2003		6.1 (E)		
11/19/2003		5.9 (E)	1.1 (P)	
05/05/2004	.99 (J)	6 (E)		
05/06/2004			.38 (J)	
Mean	1.4475	7.08	8.05273	.59
	35 MW-9B	47 MW-12A	49 MW-12B	51 MW-12CR
PAL	.5	.5	.5	.5
ES	5	5	5	5
07/19/2000	4.3 (P)			
11/13/2000				.7 (J)
11/14/2000	3.4 (P)			
02/20/2001		.42 (J)		.67 (J)
02/21/2001	3.5 (P)			
05/22/2001			7.2 (E)	.76 (J)

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 34030 BENZENE

Units: ug/L

(Continued)

	35 MW-9B	47 MW-12A	49 MW-12B	51 MW-12CR
05/23/2001	5.1 (E)			
08/07/2001			.68 (J)	1.7 (J)
08/08/2001	.9 (J)			
11/27/2001			1.5 (P)	1.9 (J)
11/28/2001	4.9 (P)			
02/25/2002			7.4 (E)	1.9 (J)
02/26/2002	4.1 (P)			
05/22/2002	1.9 (P)		9.6 (E)	2.7 (J)
08/06/2002	1 (P)			
08/07/2002			.58 (J)	2.7 (J)
11/12/2002				3.6 (J)
11/13/2002	2.9 (P)			
02/26/2003	1.1 (P)			5 (J)
05/20/2003	4.3 (P)		12 (E)	4.6 (J)
08/11/2003	.37 (J)		.52 (J)	5 (J)
11/19/2003	3.9 (P)	.34 (J)	1.8 (P)	6.6 (J)
02/18/2004	2.7 (P)			
02/19/2004		1.3 (P)	.78 (J)	6.4 (J)
05/04/2004			11 (E)	8.7 (J)
05/06/2004	4.5 (P)			

Mean	3.05438	.68667	4.82364	3.52867
------	---------	--------	---------	---------

	53 MW-13A	55 MW-13B	75 MW-17A	77 MW-17B
PAL	.5	.5	.5	.5
ES	5	5	5	5
07/19/2000	3.5 (P)	1.4 (P)		
07/20/2000				5.7 (P)
11/14/2000	8.2 (E)	.67 (J)		
11/15/2000				3.7 (P)
02/21/2001	11 (E)			
02/22/2001			1.9 (P)	2.8 (P)
05/23/2001	6.4 (E)	2.2 (P)		
05/24/2001				4.8 (P)

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 34030 BENZENE

Units: ug/L

(Continued)

	53 MW-13A	55 MW-13B	75 MW-17A	77 MW-17B
08/08/2001	4.2 (P)	4.6 (P)		
11/28/2001	4.5 (P)	4.4 (P)		
02/26/2002	6 (E)	4.5 (P)		
05/22/2002	4 (P)	9.8 (E)		
05/23/2002				3.7 (P)
08/06/2002	2.4 (P)	12 (E)		
03/05/2003	6.7 (E)	4 (P)		
05/20/2003	5.3 (E)	8.7 (E)		
05/21/2003				5.7 (P)
08/11/2003	7.9 (E)	4.8 (P)		
11/19/2003	7 (E)	4 (P)		
02/19/2004	7.6 (E)	4.7 (P)		
05/04/2004	6.1 (E)	7.6 (E)		
05/05/2004			.43 (J)	4.9 (P)

Mean

6.05333

5.24071

1.165

4.47143

Parameter: 34475 TETRCHLRETHYLENE

Units: ug/L

	47 MW-12A	49 MW-12B	51 MW-12CR	53 MW-13A
PAL	.5	.5	.5	.5
ES	5	5	5	5
07/19/2000	4.7 (P)		21 (E)	
11/13/2000		1.2 (P)	21 (E)	
02/20/2001	.42 (J)	1.1 (P)	17 (E)	
05/22/2001		1.1 (J)	13 (E)	
08/07/2001		.86 (J)	13 (E)	
08/08/2001				.4 (J)
11/27/2001		.71 (J)	9.1 (E)	
02/25/2002		1 (J)	8.8 (E)	
05/22/2002			10 (E)	
08/07/2002			11 (E)	
11/12/2002		.47 (J)	8.7 (E)	
02/26/2003		.45 (J)	9.4 (J)	

West Central Region  
License Number: 184

County: Monroe  
Facility Name: TOMAH SAN LF

Sample Date Range: 01/01/1998 thru 04/01/2005  
FID: 642009720

Parameter: 34475 TETRCHLRETHYLENE Units: ug/L (Continued)

	47 MW-12A	49 MW-12B	51 MW-12CR	53 MW-13A
05/20/2003			10 (E)	
08/11/2003		.39 (J)	14 (E)	
11/19/2003			18 (E)	
02/19/2004			10 (E)	
05/04/2004			14 (E)	
Mean	2.56	.80889	13	.4

	55 MW-13B
PAL	.5
ES	5
08/08/2001	.5 (J)
11/28/2001	.48 (J)
02/26/2002	.58 (J)
03/05/2003	.55 (J)
Mean	.5275

Parameter: 39175 VINYL CHLORIDE Units: ug/L

	5 MW-2A	7 MW-2B	9 MW-3A	11 MW-3B
PAL	.02	.02	.02	.02
ES	.2	.2	.2	.2
07/20/2000	13 (E)	9 (E)		
07/21/2000				200 (E)
11/15/2000	12 (E)	6.1 (E)	6.4 (E)	130 (E)
02/22/2001		5.7 (E)		
02/23/2001	5.9 (E)		8.2 (E)	170 (E)
05/24/2001	9.2 (E)	1.8 (E)		84 (E)
11/29/2001	4.3 (E)	1.6 (E)		
11/30/2001				160 (E)
02/27/2002	4.3 (E)	.95 (E)		99 (E)
05/23/2002	4.7 (E)	.84 (E)		

West Central Region  
License Number: 184

County: Monroe  
Facility Name: TOMAH SAN LF

Sample Date Range: 01/01/1998 thru 04/01/2005  
FID: 642009720

Parameter: 39175 VINYL CHLORIDE

Units: ug/L

(Continued)

	5 MW-2A	7 MW-2B	9 MW-3A	11 MW-3B
05/29/2002				110 (E)
08/05/2002	3 (E)	.7 (E)		
08/06/2002				120 (E)
11/13/2002	1.4 (E)	1 (E)		150 (E)
05/19/2003	.49 (J)	.45 (J)		
05/22/2003				110 (E)
11/19/2003		.45 (J)		100 (E)
05/06/2004				120 (E)
Mean	5.829	2.59909	7.3	129.41667

	12 MW-3C	13 MW-4A	15 MW-4B	17 MW-5A
PAL	.02	.02	.02	.02
ES	.2	.2	.2	.2
07/20/2000				1.5 (E)
07/21/2000	210 (E)		56 (E)	
11/15/2000	200 (E)			1.6 (E)
11/16/2000		9.6 (E)	52 (E)	
02/22/2001				1 (E)
02/23/2001	190 (E)	6.6 (E)	44 (E)	
05/24/2001	120 (E)		35 (E)	.24 (J)
11/29/2001			44 (E)	
11/30/2001	190 (E)			
02/26/2002			33 (E)	
02/27/2002	140 (E)			
05/23/2002		.15 (J)	38 (E)	
05/29/2002	140 (E)			
08/05/2002			38 (E)	
08/06/2002	140 (E)			
11/12/2002			41 (E)	
11/13/2002	150 (E)			
05/21/2003			31 (E)	
05/22/2003	130 (E)			
11/19/2003	120 (E)			

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 39175 VINYL CHLORIDE

Units: ug/L

(Continued)

	12 MW-3C	13 MW-4A	15 MW-4B	17 MW-5A
11/20/2003			33 (E)	
05/05/2004				1.7 (E)
05/06/2004	130 (E)		29 (E)	
Mean	155	5.45	39.5	1.208
	19 MW-5B	20 MW-5C	23 MW-7A	31 MW-8A
PAL	.02	.02	.02	.02
ES	.2	.2	.2	.2
07/20/2000	65 (E)			
07/21/2000			340 (E)	
11/15/2000	60 (E)	.42 (J)	300 (E)	19 (E)
02/22/2001	54 (E)			
02/23/2001			220 (E)	25 (E)
05/24/2001	39 (E)		50 (E)	6.8 (E)
11/29/2001			99 (E)	4.3 (E)
02/27/2002			61 (E)	16 (E)
05/23/2002	39 (E)		22 (E)	1.8 (E)
08/05/2002	37 (E)		8.6 (E)	
11/12/2002	35 (E)			
11/14/2002			25 (E)	.77 (E)
05/21/2003	38 (E)			
05/22/2003			.37 (J)	7.4 (E)
11/19/2003	39 (E)		7.1 (E)	5.1 (E)
05/05/2004	35 (E)			
05/06/2004			.6 (E)	.9 (E)
Mean	44.1	.42	94.4725	8.707
	33 MW-9A	35 MW-9B	47 MW-12A	49 MW-12B
PAL	.02	.02	.02	.02
ES	.2	.2	.2	.2

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 39175	VINYL CHLORIDE	Units: ug/L	(Continued)
	33 MW-9A	35 MW-9B	47 MW-12A      49 MW-12B
07/19/2000	3.7 (E)	47 (E)	7 (E)
11/13/2000			1.5 (E)      4.2 (E)
11/14/2000	5.3 (E)	37 (E)	
02/20/2001			6.9 (E)      4.2 (E)
02/21/2001	4.1 (E)	32 (E)	
05/22/2001			74 (E)
05/23/2001	2.9 (E)	33 (E)	
08/07/2001			8.6 (E)
08/08/2001	7.4 (E)	7.9 (E)	
11/27/2001			3.3 (E)      13 (E)
11/28/2001	1.7 (E)	36 (E)	
02/25/2002			.44 (J)      67 (E)
02/26/2002	1.3 (E)	31 (E)	
05/22/2002	.22 (J)	16 (E)	1.4 (E)      110 (E)
08/06/2002		10 (E)	
08/07/2002			7 (E)
11/12/2002			1.9 (E)
11/13/2002		25 (E)	
02/26/2003		13 (E)	1 (E)      1.1 (E)
05/20/2003		36 (E)	
08/11/2003		4.4 (E)	120 (E)      5.6 (E)
11/19/2003		37 (E)	7.8 (E)      21 (E)
02/18/2004		20 (E)	
02/19/2004			26 (E)      9 (E)
05/04/2004			1.1 (E)      110 (E)
05/06/2004		33 (E)	
Mean	3.3275	26.14375	5.49333      35.225
	51 MW-12CR	53 MW-13A	55 MW-13B      75 MW-17A
PAL	.02	.02	.02
ES	.2	.2	.2
07/19/2000	4.6 (E)	47 (E)	11 (E)
11/13/2000	4.1 (E)		



West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 39175 VINYL CHLORIDE

Units: ug/L

(Continued)

	51 MW-12CR	53 MW-13A	55 MW-13B	75 MW-17A
11/14/2000		98 (E)	4.6 (E)	
02/20/2001	5.4 (E)			
02/21/2001		120 (E)	.9 (E)	
02/22/2001				6 (P)
05/22/2001	6.1 (E)			
05/23/2001		73 (E)	18 (E)	
08/07/2001	10 (E)			
08/08/2001		42 (E)	43 (E)	
11/27/2001	14 (E)			
11/28/2001		39 (E)	35 (E)	
02/25/2002	22 (E)			
02/26/2002		56 (E)	42 (E)	
05/22/2002	43 (E)	47 (E)	100 (E)	
08/06/2002		29 (E)	140 (E)	
08/07/2002	48 (E)			
11/12/2002	87 (E)			
02/26/2003	100 (E)			
03/05/2003		82 (E)	40 (E)	
05/20/2003	95 (E)	57 (E)	79 (E)	
08/11/2003	98 (E)	85 (E)	37 (E)	
11/19/2003	140 (E)	84 (E)	43 (E)	
02/19/2004	130 (E)	73 (E)	51 (E)	
05/04/2004	160 (E)	69 (E)	78 (E)	
05/05/2004				.33 (J)

	51	53	55	75
Mean	60.45	66.73333	48.16667	3.165

77  
MW-17B

	77
PAL	.02
ES	.2

	77
07/20/2000	69 (P)
11/15/2000	39 (P)
02/22/2001	30 (P)
05/24/2001	37 (P)

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 39175 VINYL CHLORIDE

Units: ug/L

(Continued)

77  
MW-17B

05/23/2002	40 (P)
05/21/2003	45 (P)
05/05/2004	40 (P)

Mean 42.85/14

Parameter: 39180 TRICHLOROETHENE

Units: ug/L

47  
MW-12A49  
MW-12B51  
MW-12CR53  
MW-13A

PAL	.5
ES	5

.5
5

.5
5

.5
5

07/19/2000		4.8 (P)	
11/13/2000	.46 (J)	4.2 (P)	
02/20/2001	.34 (J)	3.6 (P)	
05/22/2001		2.8 (P)	
08/07/2001	.4 (J)	3.7 (P)	
11/27/2001	.32 (J)	2.9 (J)	
11/28/2001			.42 (J)
02/25/2002		3 (J)	
05/22/2002		3.8 (J)	
08/07/2002		3.3 (J)	
11/12/2002		4.4 (J)	
02/26/2003		4.9 (J)	
05/20/2003		5.7 (E)	
08/11/2003		6.1 (J)	
11/19/2003		9 (E)	
02/19/2004	.4 (J)	6.7 (J)	
05/04/2004		8.8 (J)	

Mean .4

.38

4.85625

.42

55  
MW-13B77  
MW-17B

PAL	.5
ES	5

.5
5

West Central Region  
License Number: 184

County: Monroe  
Facility Name: TOMAH SAN LF

Sample Date Range: 01/01/1998 thru 04/01/2005  
FID: 642009720

Parameter: 39180 TRICHLOROETHENE Units: ug/L (Continued)

	55 MW-13B	77 MW-17B
11/15/2000		1.2 (P)
02/22/2001		.98 (J)
05/24/2001		.92 (J)
08/08/2001	.65 (J)	
11/28/2001	.56 (J)	
02/26/2002	.75 (J)	
05/23/2002		1.7 (P)
03/05/2003	.73 (J)	
08/11/2003	.62 (J)	
11/19/2003	.53 (J)	
05/05/2004		1.5 (P)

Mean .64 1.26

Parameter: 77093 CIS12DICHLRETHEN Units: ug/L

	13 MW-4A	15 MW-4B	17 MW-5A	19 MW-5B
PAL	7	/	7	7
ES	70	70	70	70
11/15/2000			.36 (J)	.7 (J)
11/16/2000	.32 (J)			
02/23/2001	.19 (J)			
05/24/2001		.23 (J)		.49 (J)
02/26/2002		.27 (J)		
05/23/2002		.22 (J)		.75
08/05/2002				.66
11/12/2002				.57
05/21/2003				.68
05/05/2004				.51

Mean .255 .24 .36 .62286

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 77093 CIS12DICHLRETHEN

Units: ug/L

(Continued)

	31 MW-8A	33 MW-9A	35 MW-9B	47 MW-12A
PAL	7	7	7	7
ES	70	70	70	70
07/19/2000			4.8	
11/13/2000				2.5
11/14/2000		.75	3.8	
11/15/2000	.22 (J)			
02/20/2001				7.4 (P)
02/21/2001		.59	3.6	
02/23/2001	.22 (J)			
05/23/2001			3.8	
08/07/2001				.28 (J)
08/08/2001		.54	1.1	
11/27/2001				4.7
11/28/2001			4.4	
02/25/2002				.65
02/26/2002			3.4	
05/22/2002			1.3	1
08/06/2002			1.1	
11/13/2002			2.1	
02/26/2003			1.2	.64
05/20/2003			3.6	
08/11/2003			.47 (J)	.3 (J)
11/19/2003			3.7	4.7
02/18/2004			2.5	
02/19/2004				17 (P)
05/04/2004				.87
05/06/2004			3.5	
Mean	.22	.62667	2.77313	3.64

	49 MW-12B	51 MW-12CR	53 MW-13A	55 MW-13B
PAL	7	7	7	7
ES	70	70	70	70

West Central Region  
License Number: 184

County: Monroe  
Facility Name: TOMAH SAN LF

Sample Date Range: 01/01/1998 thru 04/01/2005  
FID: 642009720

Parameter: 77093	CIS12DICHLRETHEN	Units: ug/L	(Continued)
	49 MW-12B	51 MW-12CR	53 MW-13A 55 MW-13B
07/19/2000	5.7	23 (P)	8.5 (P) 7.5 (P)
11/13/2000	6.1	26 (P)	
11/14/2000			26 (P) 5.2
02/20/2001	4.8	30 (P)	
02/21/2001			35 (P) 2.4
05/22/2001	15 (P)	36 (P)	
05/23/2001			17 (P) 6.9
08/07/2001	8.7 (P)	67 (P)	
08/08/2001			13 (P) 14 (P)
11/27/2001	6.9	96 (E)	
11/28/2001			15 (P) 13 (P)
02/25/2002	14 (P)	110 (E)	
02/26/2002			24 (P) 16 (P)
05/22/2002	12 (P)	140 (E)	9.3 (P) 32 (P)
08/06/2002			6.3 28 (P)
08/07/2002	4.9	140 (E)	
11/12/2002	3.4	160 (E)	
02/26/2003	3.2	210 (E)	
03/05/2003			40 (P) 15 (P)
05/20/2003	11 (P)	180 (E)	25 (P) 28 (P)
08/11/2003	4.1	190 (E)	38 (P) 23 (P)
11/19/2003	3.8	260 (E)	35 (P) 16 (P)
02/19/2004	2.6	210 (E)	36 (P) 18 (P)
05/04/2004	12 (P)	280 (E)	28 (P) 24 (P)
Mean	7.3875	134.875	23.74 16.6
	77 MW-17B		
PAL	7		
ES	70		
07/20/2000	23 (P)		
11/15/2000	22 (P)		
02/22/2001	20 (P)		
05/24/2001	15 (P)		

West Central Region

County: Monroe

Sample Date Range: 01/01/1998 thru 04/01/2005

License Number: 184

Facility Name: TOMAH SAN LF

FID: 642009720

Parameter: 77093 CIS12DICHLRETHEN

Units: ug/L

(Continued)

77  
MW-17B

05/23/2002	18 (P)
05/21/2003	13 (P)
05/05/2004	13 (P)

Mean	17.71429
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**Attachment 4**

**Institutional Controls**

464101

RESTRICTIVE COVENANTS

VOL 253 PAGE 683

Document Number

Document Title

REGISTER'S OFFICE

County of Monroe, Wis.

Received for record this 30  
day of Mar A.D., 19 98  
at 8 o'clock A M.  
W. K. P. Dutton Registers

Recording Area 14<sup>00</sup>  
Chgt

Name and Return Address

Richard A. Radcliffe  
MUBARAK & RADCLIFFE, S.C.  
917 Superior Avenue  
Post Office Box 110  
Tomah, Wisconsin 54660-01

Parcel Identification Number (PIN)

THIS PAGE IS PART OF A LEGAL DOCUMENT - DO NOT REMOVE.

THIS DOCUMENT DRAFTED BY:

Richard A. Radcliffe  
MUBARAK & RADCLIFFE, S.C.  
917 Superior Avenue  
Post Office Box 110  
Tomah, Wisconsin 54660-0110

This information must be completed by submitter: document title, name & return address, and PIN (if required). Other information such as the granting clauses, legal description, etc. may be placed on this first page of the document or may be placed on additional pages of the document. Note: Use of this cover page adds one page to your document and \$2.00 to the recording fee. Wisconsin Statutes, §9.517.

INDEXED



**DECLARATION OF RESTRICTIONS**

In re:

All that part of the SW¼-NE¼, Section 32, T18N, R1W, City of Tomah, Monroe County, Wisconsin, lying North of the following described line: Commencing at the Northeast corner of the said SW¼-NE¼; thence S1°14'32"E, along the East line of the said SW¼-NE¼, a distance of 540.98 feet, to the point of beginning of said line; thence S81°22'10"W, a distance of 633.21 feet; thence S82°26'48"W, to the West line of the said SW¼-NE¼ and the end of said line.

ALSO TO INCLUDE that part of the said SW¼-NE¼ lying South of the line described above and North of a line connecting TP-1, TP-19, TP-18, TP-17, TP16, TP-15, TP-14 and TP-13 as shown on DAMES & MOORE map titled "FIGURE 2 EXISTING CONDITIONS MAP" (PROJ. NO. 27504-002) dated April 3, 1997.

EXCEPTING THEREFROM that portion of the said SW¼-NE¼ lying Northwesterly of the centerline of Deer Creek.

**WHEREAS**, the City of Tomah, a Wisconsin Municipal Corporation, is the owner of the above-described property conveyed in Document No. 379845, Volume 66 of Deeds, at Page 463, recorded May 30, 1986 in the office of the Register of Deeds for Monroe County, Wisconsin; and

**WHEREAS**, it is the desire and intention of the City to impose on the property restrictions which will make it unnecessary at any time to conduct soil remediation activities on the property or to remove waste tires located underground on the property;

**NOW, THEREFORE**, the owner hereby declares that all of the property described above is held and shall be held, conveyed, encumbered, leased, rented, used, occupied and improved subject to the following limitations and restrictions:

All of the following activities are prohibited on the above-described property, unless prior written approval has been obtained from the Wisconsin Department of Natural Resources or its successor or assign:

- (1) Excavating or grading of the land surface;
- (2) Filling;

- (3) Plowing for agricultural cultivation; and
- (4) Construction or installation of a building or other structure with a foundation that would sit on or be placed within the above-described property.

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise, purchase or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successors or assigns. The Department, its successors or assigns, may initiate proceedings at law or in equity against any person or persons who violate or are proposing to violate this covenant, to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restrictions contained herein can be extinguished.

**IN WITNESS WHEREOF**, the owner of the property has executed this Declaration of Restrictions this 10th day of March, 1998.

Wayne Johnson, Mayor

JoAnn Cram, City Clerk

STATE OF WISCONSIN )  
 )ss.  
COUNTY OF MONROE )

Personally came before me this 10th day of March, 1998 the above-named Wayne Johnson and JoAnn Cram to me known to be the person who executed the foregoing instrument and acknowledged the same.

Richard A. Radcliffe  
My Commission is permanent.

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

(u) All major horizontal clay lined phases above the saturated zone shall be designed with a collection basin lysimeter to monitor the unsaturated zone except for composite lined landfills.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; r. and recr., Register, June, 1996, No. 486, eff. 7-1-96; am. (5) (e) and (t), Register, August, 1997, No. 500.

**NR 504.07 Minimum design and construction criteria for final cover systems.** (1) **GENERAL** (a) All final cover systems shall be designed to minimize leachate generation by limiting the amount of percolation through the cap system, reduce landfill maintenance by stabilizing the final surface through design of compatible slopes and establishment of vegetation, account for differential settlement and other stresses on the capping layer, minimize the climatic effects of freeze-thaw and desiccation on the clay capping layer of the final cover system, and provide removal of leachate and venting of gas from those landfills which accept wastes with a high moisture content or which readily biodegrade.

(b) All new landfills and expansions of existing landfills shall be designed with a final cover system meeting the requirements in subs. (2) to (9) unless it is established to the satisfaction of the department that portions of the final cover system are not needed based on the proposed waste types and the proposed design. The geomembrane component in sub. (5) does not apply to landfills designed exclusively for the disposal of high volume industrial waste, or to other landfills which are not designed to accept municipal solid waste unless the landfill is composite lined.

(c) Any phases of an existing landfill which have been designed and constructed with a composite liner shall be designed and constructed with a final cover system meeting the requirements in subs. (2) to (9), except that the requirement for the geomembrane layer in sub. (5) does not apply to composite lined phases of existing landfills which have completed final cover placement by July 1, 1996.

(d) Landfills which accept papermill sludges or other industrial solid wastes with high water contents and low strength may propose alternate final cover systems if the strength of the waste mass will not allow for the construction of the cover system required in this section.

(2) **GRADING LAYER.** A minimum 6 inch thick grading layer shall be designed over the final waste elevation of landfills proposing to accept municipal solid waste to attain the required slope and provide for a stable base for subsequent system components. Daily and intermediate cover may be used for this purpose.

(3) **SUPPORT LAYER FOR LOW STRENGTH WASTES** A support layer shall be designed for stabilization, reinforcement and removal of leachate and gas over the final waste elevations for landfills which accept industrial solid wastes with high water contents and low strength.

(4) **CLAY CAPPING LAYER.** A minimum 2 foot thick clay cap shall be designed to provide a low hydraulic conductivity barrier to percolation. Clay used for this layer shall meet the specifications in s. NR 504.06 (2) (a). The clay capping layer shall be constructed according to s. NR 504.06 (2) (f).

(5) **GEOMEMBRANE LAYER** A geomembrane layer shall be designed to provide a low hydraulic conductivity barrier to percolation. The design and construction of the geomembrane component of the final cover system shall meet the requirements of s. NR 504.06 (3) (c) to (j) and the following:

(a) The nominal geomembrane thickness shall be 40 mils or greater, with no thickness measurements falling below industry accepted manufacturing tolerances.

(b) The geomembrane shall be installed in direct contact with the clay capping layer.

(c) Penetrations of the geomembrane, such as gas extraction wells, shall be fitted with prefabricated collars of pipe and membrane or plate and welded at the same angles which the penetrations make with the final cover slope. Methods of fixing mem-

brane boots to vertical pipes extending above the geomembrane shall allow for differential settlement of the waste with respect to the piping without damage to the membrane seal.

(6) **DRAINAGE AND ROOTING ZONE LAYER.** A minimum 2.5 foot thick drainage and rooting zone layer shall be designed above the geomembrane layer or clay capping layer. This layer shall include a rooting zone to provide additional rooting depth for vegetation and to protect the geomembrane layer or the clay capping layer from freeze-thaw damage and other environmental effects. It shall also include a drainage layer to allow for the drainage of liquid infiltrating through the cap. Soils available on or near the proposed landfill property may be proposed for the rooting zone portion of this layer. This layer may not be densely compacted.

(a) For all landfills, a drainage layer shall be designed immediately above the capping layer. The drainage layer shall consist of a minimum of one foot of sand with a minimum hydraulic conductivity of  $1 \times 10^{-3}$  cm/sec or a geosynthetic drain layer of equivalent or greater transmissivity.

(b) A perimeter drain pipe shall be placed at the low end of all final cover sideslopes. The drain pipe shall be surrounded by a minimum of 6 inches of gravel or sand with a minimum hydraulic conductivity of  $1 \times 10^{-2}$  cm/sec. The drain pipe shall be sloped to a series of outlets at spacings no further than every 200 feet. Modeling may be submitted to the department which supports the proposal of a different spacing.

(7) **TOPSOIL.** A minimum of 6 inches of topsoil shall be designed over the cover layer to support the proposed vegetation. Fertilizer and lime shall be added in accordance with section 630. Wisconsin department of transportation standard specifications for road and bridge construction or other appropriate specifications in order to establish a thick vegetative growth.

(8) **REVEGETATION** The seed type and amount of fertilizer applied shall be proposed depending on the type and quality of topsoil and compatibility with both native vegetation and the final use. Unless otherwise approved by the department in writing, seed mixtures and application rates shall be in accordance with section 630. Wisconsin department of transportation standard specifications for road and bridge construction. Application rates for fertilizer and mulch shall also be specified.

**Note:** Copies of Wisconsin department of transportation standard specifications for road and bridge construction can be obtained from the department of natural resources, bureau of waste management, 101 S. Webster Street, Madison, Wisconsin, 53707. Copies are also available for inspection at the offices of the revisor of statutes and the secretary of state.

(9) **FINAL USE** The proposed final use shall be compatible with the final cover system. The following activities are prohibited at solid waste disposal landfills which are no longer in operation unless specifically approved by the department in writing.

(a) Use of the waste disposal area for agricultural purposes.

(b) Establishment or construction of any buildings over the waste disposal area.

(c) Excavation of the final cover or any waste materials.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. (1) (a), (b), (2), cr. (1) (c), (d), (5), (6) (a), (b), r. and recr. (3), (4), r. (5) (a) to (c), renum. (5) to (8) to be (6) to (9) and am. (6) (intro.), (7), (9) (intro.), (a), (b), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 504.08 Minimum design and construction criteria for landfill gas extraction systems.** (1) **GENERAL** All landfills accepting wastes with the potential to generate gas shall be designed to prevent the migration of explosive gases generated by the waste fill.

(2) **ACTIVE GAS EXTRACTION AND TREATMENT.** In order to efficiently collect and combust hazardous air contaminants, all landfills which accept municipal solid waste shall be designed with an active gas recovery system. All gas recovery systems shall include the following design features, unless otherwise approved by the department:

(a) Vertical gas extraction wells shall be proposed throughout the entire landfill with a maximum radius of influence of 150 feet

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

(124) "Well drilling" has the meaning designated in ch. 280, Stats., and includes any activity which requires the use of a well drilling rig or similar equipment, any activity which changes the character of a drilled well or which is conducted using a well drilling rig or similar equipment with the exception of the driving of points. Well drilling includes constructing, reconstructing or deepening a well, installation of a liner, installing or replacing a screen, well rehabilitation, hydrofracturing, blasting and chemical conditioning.

(125) "Well-point driving" means constructing a well by joining a drive point screen with lengths of pipe and driving the assembly into the ground with percussion equipment or by hand, but without removing material from a drillhole more than 10 feet below the ground surface.

(126) "Well vent" means a screened opening in a well seal to allow atmospheric pressure to be maintained in the well.

(127) "Well yield" means the quantity of water which may flow or be pumped from the well per unit of time.

(128) "Zone of saturation" means that part of the earth's crust beneath the shallowest water table in which all voids are filled with water under pressure greater than atmospheric.

**History:** Cr. Register, January, 1991, No. 421, eff. 2-1-91; am. (3), (4), (48), (61m), (74) (b), (79), (81), (82), (107) and (119), cr. (27m) (30f), (30m), (30t), (30x), (72m), (79m), (97m) and (110m), renum. (36) and (39) to be (61q) and (61u) and am. Register, September, 1994, No. 465, eff. 10-1-94, corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; correction in (29), (30) and (79m) made under s. 13.93 (2m) (b) 6. and 7., Stats., Register, September, 1996, No. 489; corrections in (50), (81), (97), (123) and (124) made under s. 13.93 (2m) (b) 7., Stats., Register, December, 1998, No. 516; correction in (71) made under s. 13.93 (2m) (b) 7., Stats., Register July 2002 No. 559.

#### NR 812.08 Well, reservoir and spring location.

(1) GENERAL. Any potable or nonpotable well or reservoir shall be located:

(a) So the well and its surroundings can be kept in a sanitary condition.

(b) At the highest point on the property consistent with the general layout and surroundings if reasonably possible, but in any case protected against surface water flow and flooding and not downslope from a contamination source on the property or on an adjacent property regardless of what was installed first, the well or the contamination source. When a contamination source is installed upslope from a well in violation of this section after the well construction has been completed, the violation is not the responsibility of the well driller, except if the well driller knew or should have known of the proposed upslope installation of the contamination source. When there is no location on the property where this requirement can be met, a well may be constructed without a variance if it is constructed with a minimum of 20 or more feet of well casing pipe than is required by ss. NR 812.12 and 812.13 and Tables I and II or with a minimum of 60 feet of well casing pipe provided that the minimum well casing pipe depth requirements of s. NR 812.12 or 812.13 and Table I or II are met. This exception does not apply to high capacity, school or wastewater treatment plant wells. A well or reservoir is located downslope from a contamination source, regardless of the presence or absence of a structure between the well and the contamination source, if:

1. The ground surface elevation at the well or reservoir is lower than the elevation at the contamination source, and
2. Surface water that washes over the contamination source would travel within eight feet of the well or reservoir, or over the well or reservoir.

(c) As far away from any known or possible source of contamination as the general layout of the premises and the surroundings allow.

**Note:** Section PSC 114.234 C8 requires that a horizontal clearance of at least 3/4 of the vertical clearance of the conductors, including overhead power lines to the ground required by Rule 232 shall be maintained between open conductors and wells. Persons installing wells must comply with this requirement.

(d) Such that any potential contaminant source, not identified in this section or in Table A, is a minimum of 8 feet from the well or reservoir.

(e) Every well shall be located so that it is reasonably accessible with proper equipment for cleaning, treatment, repair, testing, inspection and any other maintenance that may be necessary.

(2) RELATION TO BUILDINGS. In relation to buildings, the location of any potable or nonpotable well shall be as follows:

(a) When a well is located outside and adjacent to a building, it shall be located so that the center line of the well extended vertically will clear any projection from the building by not less than 2 feet and so that the top of the well casing pipe extends at least 12 inches above the final established ground grade.

(b) When a structure is built over a drilled well, it shall have an access hatch or removable hatch, or provide other access to allow for pulling of the pump. The well casing pipe shall extend at least 12 inches above the floor and be sealed watertight at the point where it extends through the floor.

(c) No well may be located, nor a building constructed, such that the well casing pipe will terminate in or extend through the basement of any building or terminate under the floor of a building having no basement. The top of a well casing pipe may terminate in a walkout basement meeting the criteria of s. NR 812.42 (9) (b) 1. to 4. A well may not terminate in or extend through a crawl space having a below ground grade depression or excavation.

(3) RELATION TO FLOODPLAINS. (a) A potable or nonpotable well may be constructed, reconstructed or replaced in a flood-fringe provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site.

(b) A well may be reconstructed or replaced in a floodway provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site.

(c) A well may not be constructed on a floodway property that is either undeveloped or has building structures but no existing well.

(d) The regional flood elevation may be obtained from the department.

(4) RELATION TO CONTAMINATION SOURCES. Minimum separating distances between any new potable or nonpotable well, reservoir or spring and existing sources of contamination; or between new sources of contamination and existing potable or nonpotable wells, reservoirs or springs shall be maintained as described in this subsection. The minimum separating distances of this subsection do not apply to dewatering wells approved under s. NR 812.09 (4) (a). Greater separation distances may be required for wells requiring plan approval under s. NR 812.09. Separation distance requirements to possible sources of contamination will not be waived because of property lines. Minimum separating distances are listed in Table A and are as follows:

- (a) Eight feet between a well or reservoir and a:
  1. Buried gravity flow sanitary or storm building drain having pipe conforming to ch. Comm 84;
  2. Buried gravity flow sanitary or storm building sewer having pipe conforming to ch. Comm 84;
  3. Watertight clear water waste sump;
  4. Buried clear water waste drain having pipe conforming to ch. Comm 84;
  5. Buried gravity flow foundation drain;
  6. Rainwater downspout outlet;
  7. Cistern;
  8. Buried building foundation drain connected to a clear water waste drain or other subsoil drain;
  9. Noncomplying pit, subsurface pumphouse, alcove, or reservoir;
  10. Nonpotable well;

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11. Fertilizer or pesticide storage tank with a capacity of less than 1,500 gallons, but only when the well is nonpotable;

Note: For potable wells see par. (d) 1.

12. Plastic silage storage and transfer tube;
13. Yard hydrant;
14. Swimming pool, measured to the nearest edge of the water; or
15. Dog or other small pet house, animal shelter or kennel housing not more than 3 adult pets on a residential lot.

(b) Twenty-five feet between a well or reservoir and a:

1. Buried grease interceptor or trap;
2. Septic tank;
3. Holding tank;
4. Buried building drain or building sewer having pipe not conforming to ch. Comm 84, wastewater sump, or non-watertight clear water waste sumps,
5. Buried pressurized sanitary building sewer having pipe conforming to ch. Comm 84;
6. Buried gravity manure sewer;
7. Lake, river, stream, ditch or stormwater detention pond or basin measured to the regional high water elevation in the case of a lake or stormwater detention pond, to the edge of the floodway in the case of a river or stream or to the edge in the case of a ditch or stormwater detention basin;
9. Liquid-tight barn gutter;
10. Animal barn pen with concrete floor;

11. Buried pressurized sewer pipe conveying manure provided that the pipe meets ASTM specification D 2241, with standard dimension ratio of 21 or less or pressure pipe meeting the requirements of s. NR 110.13 (6) (f) or 811.62.

Note: There is no NR 110.13 (6) (f).

12. Buried fuel oil tanks serving single family residences, including any associated buried piping:

13. Discharge to ground from a water treatment device;
14. Vertical shaft installed below grade used for intake of air for a heating or air conditioning system; or
15. Buried sanitary or storm collector sewer serving 4 or fewer living units or having a diameter of 6 inches or less.

(c) Fifty feet between a well or reservoir and a:

1. Soil absorption unit receiving less than 8,000 gallons/day, existing, abandoned or alternate, but not including a school soil absorption unit;

Note: For school soil absorption units see par. (e); for soil absorption units receiving more than 8,000 gallons/day see par. (f) 3.

2. Privy;
3. Pet waste pit disposal unit;
4. Animal shelter;
5. Animal yard;
6. Silo;
7. Buried sewer used to convey manure having pipe conforming to ch. Comm 84 that does not meet the specifications in par. (b);

8. Liquid tight manure hopper or reception tank;

9. Filter strip;

10. Buried sanitary or storm collector sewer serving more than 4 living units or larger than 6 inches in diameter except that wells may be located or sewers installed such that a well is less than 50 feet, but at least 25 feet, from gravity collector sewers smaller than 16 inches in diameter or from force main collector sewers 4 inches or smaller in diameter provided that within a 50-foot radius of the well the installed sewer pipe meets the allowable leakage requirements of AWWA C600 and the requirements for water main equivalent type pipe as follows:

a. For sewers > 4" diameter, but < 16" diameter: PVC pipe > 4" diameter, but < 12" diameter shall meet AWWA C900 with

elastomeric joints having a standard dimension ratio of 18 or less; PVC pipe > 12" diameter, but < 16" diameter shall meet AWWA C905 with elastomeric joints having a standard dimension ratio of 18 or less; Ductile iron pipe shall meet AWWA C115 or AWWA C151 having a thickness class 50 or more.

b. For sewers < 3" diameter, the pipe shall be any rigid pipe in the ch. Comm 84 "Table for Pipe and Tubing for Water Services and Private Water Mains," including approved ABS, brass, cast iron, CPVC, copper (not including type M copper) ductile iron, galvanized steel, polybutylene (PB), polyethylene (PE), PVC, or stainless steel pipe.

11. An influent sewer to a wastewater treatment plant;
12. The nearest existing or future grave site in cemeteries;
13. Wastewater treatment plant effluent pipe;
14. Buried pressurized sewer having pipe not conforming to ch. Comm 84; or
15. Manure loading area.

Note: The minimum separating distance between a well or reservoir and a lift station is based on the presence of a sewer force main at the lift station.

(d) One hundred feet between a well or reservoir and a:

1. Bulk surface storage tank with a capacity greater than 1,500 gallons or any bulk buried storage tank regardless of capacity, including, for both surface or buried tanks, associated buried piping for any solid, semi-solid or liquid product but not including those regulated under par. (b) 12. This subdivision includes, but is not limited to petroleum product tanks, waste oil tanks and pesticide or fertilizer storage tanks not regulated under par. (a) 11. This subdivision does not include septic, holding and manure reception tanks, or liquified petroleum gas tanks as specified in ch. Comm 11.

2. Liquid tight, fabricated manure or silage storage structure, in ground or at ground surface;

3. Wastewater treatment plant structure, conveyance or treatment unit; or

4. Dry fertilizer or pesticide storage building or area when more than 100 pounds of either or both materials are stored;

5. Well, drillhole or water system used for the underground placement of any waste, surface or subsurface water or any substance as defined in s. 160.01 (8), Stats.;

6. Stormwater infiltration basin;

7. Uncovered storage of silage on the ground surface;

8. Water tight silage storage trench or pit; or

9. Lift station.

(e) Two hundred feet between a school well and a soil absorption unit receiving less than 8,000 gallons per day, existing or abandoned.

(ee) One hundred fifty feet between a well or reservoir and a temporary manure stack.

(f) Two hundred fifty feet between a well or reservoir and a:

1. Manure stack.

2. Earthen or excavated manure storage structure.

Note: Variances from the separating distances may be granted as specified in s. NR 812.43 for earthen storage and manure stacks constructed and maintained to the specifications of Soil Conservation Standards No. 425 or 312, respectively.

3. Soil absorption unit receiving 8,000 or more gallons per day, existing, abandoned, or alternate.

4. Sludge landspreading or drying area.

5. An earthen silage storage trench or pit.

6. Liquid waste disposal system including, but not limited to a treatment pond or lagoon, ridge and furrow system and spray irrigation system.

Note: Variance from this separating distance may be granted for treatment ponds or lagoons constructed and maintained to an approval granted under ch. NR 213.

7. Salvage yard.

8. A salt or deicing material storage area including the building structure and the surrounding area where the material is trans-

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ferred to vehicles. This subdivision does not include bagged deicing material.

9. Solid waste processing facility.

10. Solid waste transfer facility.

11. The boundaries of a landspreading facility for spreading of petroleum-contaminated soil regulated under ch. NR 718 while that facility is in operation.

→ (g) Twelve hundred feet between a well or reservoir and:

1. The nearest edge of an existing, proposed or abandoned landfill, measured to the nearest fill area of abandoned landfills, if known, otherwise measured to the nearest property line;

2. The nearest edge of a coal storage area in excess of 500 tons; or

3. A hazardous waste treatment facility regulated by the department.

**Attachment 5**

**Site Inspection Checklist  
Monitoring Well Maintenance Needs**

Please note that “O&M” is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as “system operations” since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

## Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION	
Site name: <u>Tomah Municipal Sanitary L.F.</u>	Date of inspection: <u>Nov. 17, 2004</u>
Location and Region: <u>City of Tomah</u> <u>Monroe Co., WI Reg. 5</u>	EPA ID: <u>WID980610307</u>
Agency, office, or company leading the five-year review: <u>Wisc. Dept. of Natural Resources</u>	Weather/temperature: <u>Clear</u> <u>45° F, v. light breeze</u>
<b>Remedy Includes:</b> (Check all that apply) <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> Landfill cover/containment  <input checked="" type="checkbox"/> Access controls  <input checked="" type="checkbox"/> Institutional controls            Groundwater pump and treatment            Surface water collection and treatment            Other <u>Landfill gas extraction system</u> </div> <div style="width: 45%;"> <input checked="" type="checkbox"/> Monitored natural attenuation            Groundwater containment            Vertical barrier walls         </div> </div>	
<b>Attachments:</b> Inspection team roster attached      Site map attached	
II. INTERVIEWS (Check all that apply)	
1. O&M site manager <u>Brian Sandberg</u> <u>Site manager</u> <u>11/17/04</u> <div style="display: flex; justify-content: space-between;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <u>at site</u> at office by phone Phone no. _____ Problems, suggestions; <u>Report attached</u>	
2. O&M staff <u>Pete Storlie</u> _____ <u>11/17/04</u> <div style="display: flex; justify-content: space-between;"> <span>Name</span> <span>Title</span> <span>Date</span> </div> Interviewed <u>at site</u> at office by phone Phone no. _____ Problems, suggestions; <u>Report attached</u>	



3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency City of Tomah  
 Contact John Rusch City Adminis. 11/17/05 608-374-7420  
 Name Title Date Phone no.  
 Problems; suggestions; Report attached

Agency City of Tomah  
 Contact Bill Phillips Street Dept. Foreman 12/2/04 608-343-2455  
 Name Title Date Phone no.  
 Problems; suggestions; Report attached No problems. Mr. Phillips is in  
charge of landfill moving. Suggestion re control panel.

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.  
 Problems; suggestions; Report attached \_\_\_\_\_

Agency \_\_\_\_\_  
 Contact \_\_\_\_\_  
 Name Title Date Phone no.  
 Problems; suggestions; Report attached \_\_\_\_\_

4. Other interviews (optional) Report attached.

Jack Eslien, WDR, Hydrogeologist, field oversight during  
cap construction. 12/23/2004  
Roger Williams, Resident east of landfill 11/18/04  
Mrs. Schmitt, 813 W. Veteran's St, nearby resident 11/18/04  
Arliss Henry, 23550 Flame Ave, nearby resident 11/18/04  
Kevin Rouse, 23671 Co. H "ET", nearby resident 11/18/04

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	<b>O&amp;M Documents</b> O&M manual As-built drawings Maintenance logs Remarks <u>O + M refers to systems operations</u>	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date <input checked="" type="checkbox"/> Up to date <input checked="" type="checkbox"/> Up to date	N/A N/A N/A
2.	<b>Site-Specific Health and Safety Plan</b> Contingency plan/emergency response plan Remarks <u>Feb 2000 - date of last health &amp; safety plan. A new plan is to be submitted for O&amp;M.</u>	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	N/A N/A
3.	<b>O&amp;M and OSHA Training Records</b> Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	N/A
4.	<b>Permits and Service Agreements</b> Air discharge permit Effluent discharge Waste disposal, POTW Other permits _____ Remarks _____	Readily available Readily available Readily available Readily available	Up to date Up to date Up to date Up to date	<del>N/A</del> <del>N/A</del> <del>N/A</del> <del>N/A</del>
5.	<b>Gas Generation Records</b> Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	N/A
6.	<b>Settlement Monument Records</b> Remarks <u>surveyed annual</u>	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	N/A
7.	<b>Groundwater Monitoring Records</b> Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	N/A
8.	<b>Leachate Extraction Records</b> Remarks _____	Readily available	Up to date	<del>N/A</del>
9.	<b>Discharge Compliance Records</b> Air Water (effluent) Remarks _____	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date <input checked="" type="checkbox"/> Up to date	<del>N/A</del> <del>N/A</del>
10.	<b>Daily Access/Security Logs</b> Remarks _____	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	N/A

## IV. O&amp;M COSTS

## 1. O&amp;M Organization

State in-house

Contractor for State

PRP in-house

☒ Contractor for PRP

Federal Facility in-house

Contractor for Federal Facility

Other \_\_\_\_\_

## 2. O&amp;M Cost Records

☒ Readily available☒ Up to date

Funding mechanism/agreement in place

(EPA in FS for OUI)

Original O&amp;M cost estimate \$32,200 Breakdown attached

Total annual cost by year for review period if available

From 8/00 To 8/01 \$160,745. Breakdown attached

From 9/01 To 8/02 144,030. Breakdown attached

From 9/02 To 8/03 116,690. Breakdown attached

From 9/03 To 8/04 144,760. Breakdown attached

From \_\_\_\_\_ To \_\_\_\_\_ Total cost Breakdown attached

Date Date Total cost Breakdown attached

Date Date Total cost Breakdown attached

## 3. Unanticipated or Unusually High O&amp;M Costs During Review Period

Describe costs and reasons:

8/00 - 8/01 - included weekly gas monitoring

9/03 - 8/04 - included construction of berm at south edge of landfill.

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

## A. Fencing

## 1. Fencing damaged

Location shown on site map

Gates secured Yes

N/A

Remarks Fencing observed to be in good condition

## B. Other Access Restrictions

## 1. Signs and other security measures

Location shown on site map

N/A

Remarks No trespassing signs at gate on North Ave.

**C. Institutional Controls (ICs)****1. Implementation and enforcement**

Site conditions imply ICs not properly implemented

Yes No N/A

Site conditions imply ICs not being fully enforced

Yes No N/A

Type of monitoring (e.g., self-reporting, drive by) \_\_\_\_\_

Frequency \_\_\_\_\_

Responsible party/agency \_\_\_\_\_

Contact \_\_\_\_\_

Name

Title

Date

Phone no.

Reporting is up-to-date

Yes No N/A

Reports are verified by the lead agency

Yes No N/A

Specific requirements in deed or decision documents have been met

Yes No N/A

Violations have been reported

Yes No N/A

Other problems or suggestions: Report attached

*new* Institutional controls in form of restrictive covenants on property deeds have not yet been implemented. Site inspection yielded no observation of supply wells on contaminated properties

**2. Adequacy**

ICs are adequate

ICs are inadequate

N/A

Remarks

Restricted covenants have not yet been implemented

**D. General****1. Vandalism/trespassing**

Location shown on site map

No vandalism evident ✓

Remarks \_\_\_\_\_

**2. Land use changes on site** N/ARemarks none**3. Land use changes off site** N/ARemarks none**VI. GENERAL SITE CONDITIONS****A. Roads**

Applicable

N/A

**1. Roads damaged**

Location shown on site map

✓ Roads adequate

N/A

Remarks \_\_\_\_\_

<b>B. Other Site Conditions</b>			
Remarks _____			
_____			
_____			
_____			
_____			
_____			
<b>VII. LANDFILL COVERS</b> <u>Applicable</u> N/A			
<b>A. Landfill Surface</b>			
1.	<b>Settlement</b> (Low spots) Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	<u>Settlement not evident</u>
2.	<b>Cracks</b> Lengths _____ Remarks _____	Widths _____ Depths _____	<u>Cracking not evident</u>
3.	<b>Erosion</b> Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	<u>Erosion not evident</u>
4.	<b>Holes</b> Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	<u>Holes not evident</u>
5.	<b>Vegetative Cover</b> <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established    No signs of stress Trees/Shrubs (indicate size and locations on a diagram) Remarks <u>Area on S. side needs re-seeding. (This is where berm was constructed. (200' x 25'))</u>		
6.	<b>Alternative Cover</b> (armored rock, concrete, etc.)		<u>N/A</u>
7.	<b>Bulges</b> Areal extent _____ Remarks _____	Location shown on site map _____ Height _____	<u>Bulges not evident</u>

8.	<b>Wet Areas/Water Damage</b>	<u>Wet areas/water damage not evident</u>	
	Wet areas	Location shown on site map	Areal extent _____
	Ponding	Location shown on site map	Areal extent _____
	Seeps	Location shown on site map	Areal extent _____
	Soft subgrade	Location shown on site map	Areal extent _____
	Remarks _____		
9.	<b>Slope Instability</b>	Slides	Location shown on site map <u>No evidence of slope instability</u>
	Areal extent _____		
	Remarks _____		
<b>B. Benches</b> Applicable <u>N/A</u> (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	<b>Flows Bypass Bench</b>	Location shown on site map	<u>N/A</u> or okay
	Remarks _____		
2.	<b>Bench Breached</b>	Location shown on site map	<u>N/A</u> or okay
	Remarks _____		
3.	<b>Bench Overtopped</b>	Location shown on site map	<u>N/A</u> or okay
	Remarks _____		
<b>C. Letdown Channels</b> Applicable <u>N/A</u> (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	<b>Settlement</b>	Location shown on site map	No evidence of settlement
	Areal extent _____	Depth _____	
	Remarks _____		
2.	<b>Material Degradation</b>	Location shown on site map	No evidence of degradation
	Material type _____	Areal extent _____	
	Remarks _____		
3.	<b>Erosion</b>	Location shown on site map	No evidence of erosion
	Areal extent _____	Depth _____	
	Remarks _____		

4.	<b>Undercutting</b> Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	<u>No evidence of undercutting</u> <b>ek</b>
5.	<b>Obstructions</b> Type _____ Location shown on site map _____ Size _____ Remarks _____	Areal extent _____	No obstructions
6.	<b>Excessive Vegetative Growth</b> Type _____ No evidence of excessive growth Vegetation in channels does not obstruct flow Location shown on site map _____ Remarks _____	Areal extent _____	
<b>D. Cover Penetrations</b> <u>Applicable</u> N/A			
1.	<b>Gas Vents</b> <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning Evidence of leakage at penetration N/A Remarks _____	<u>Active</u> <input checked="" type="checkbox"/> Routinely sampled Needs Maintenance	<input checked="" type="checkbox"/> Good condition
2.	<b>Gas Monitoring Probes</b> <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning Evidence of leakage at penetration Remarks _____	<input checked="" type="checkbox"/> Routinely sampled Needs Maintenance	<input checked="" type="checkbox"/> Good condition N/A
3.	<b>Monitoring Wells</b> (within surface area of landfill) Properly secured/locked <input checked="" type="checkbox"/> Functioning Evidence of leakage at penetration Remarks _____	<input checked="" type="checkbox"/> Routinely sampled Needs Maintenance	Good condition <u>N/A</u>
4.	<b>Leachate Extraction Wells</b> Properly secured/locked <input checked="" type="checkbox"/> Functioning Evidence of leakage at penetration Remarks _____	<input checked="" type="checkbox"/> Routinely sampled Needs Maintenance	Good condition <u>N/A</u>
5.	<b>Settlement Monuments</b> Remarks _____	<input checked="" type="checkbox"/> Located <input checked="" type="checkbox"/> Routinely surveyed	N/A

<b>E. Gas Collection and Treatment</b>		<u>Applicable</u>	N/A
1.	<b>Gas Treatment Facilities</b> Flaring                      Thermal destruction                      Collection for reuse Good condition                      Needs Maintenance Remarks <u>Landfill gas is extracted. Treatment is not required.</u>		
2.	<b>Gas Collection Wells, Manifolds and Piping</b> <input checked="" type="checkbox"/> Good condition                      Needs Maintenance Remarks _____		
3.	<b>Gas Monitoring Facilities</b> (e.g., gas monitoring of adjacent homes or buildings) <input checked="" type="checkbox"/> Good condition                      Needs Maintenance                      N/A Remarks _____		
<b>F. Cover Drainage Layer</b>		Applicable	<u>N/A</u>
1.	<b>Outlet Pipes Inspected</b> Functioning                      N/A Remarks _____		
2.	<b>Outlet Rock Inspected</b> Functioning                      N/A Remarks _____		
<b>G. Detention/Sedimentation Ponds</b>		Applicable	<u>N/A</u>
1.	<b>Siltation</b> Areal extent _____ Depth _____ N/A Siltation not evident Remarks _____		
2.	<b>Erosion</b> Areal extent _____ Depth _____ Erosion not evident Remarks _____		
3.	<b>Outlet Works</b> Functioning                      N/A Remarks _____		
4.	<b>Dam</b> Functioning                      N/A Remarks _____		



<b>H. Retaining Walls</b>		Applicable	N/A
1.	<b>Deformations</b> Horizontal displacement _____ Rotational displacement _____ Remarks _____	Location shown on site map _____ Vertical displacement _____	Deformation not evident
2.	<b>Degradation</b> Remarks _____	Location shown on site map _____	Degradation not evident
<b>I. Perimeter Ditches/Off-Site Discharge</b>		Applicable	N/A
1.	<b>Siltation</b> Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	Siltation not evident
2.	<b>Vegetative Growth</b> Vegetation does not impede flow Areal extent _____ Remarks _____	Location shown on site map _____ Type _____	N/A
3.	<b>Erosion</b> Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	Erosion not evident
4.	<b>Discharge Structure</b> Remarks _____	Functioning	N/A
<b>VIII. VERTICAL BARRIER WALLS</b>		Applicable	N/A
1.	<b>Settlement</b> Areal extent _____ Remarks _____	Location shown on site map _____ Depth _____	Settlement not evident
2.	<b>Performance Monitoring</b> Type of monitoring _____ Performance not monitored Frequency _____ Head differential _____ Remarks _____	Evidence of breaching	

<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b>				Applicable	N/A
<b>A. Groundwater Extraction Wells, Pumps, and Pipelines</b>				Applicable	N/A
1.	<b>Pumps, Wellhead Plumbing, and Electrical</b>				
	Good condition	All required wells properly operating	Needs Maintenance	N/A	
Remarks _____					
_____					
2.	<b>Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b>				
	Good condition	Needs Maintenance			
Remarks _____					
_____					
3.	<b>Spare Parts and Equipment</b>				
	Readily available	Good condition	Requires upgrade	Needs to be provided	
Remarks _____					
_____					
<b>B. Surface Water Collection Structures, Pumps, and Pipelines</b>				Applicable	N/A
1.	<b>Collection Structures, Pumps, and Electrical</b>				
	Good condition	Needs Maintenance			
Remarks _____					
_____					
2.	<b>Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances</b>				
	Good condition	Needs Maintenance			
Remarks _____					
_____					
3.	<b>Spare Parts and Equipment</b>				
	Readily available	Good condition	Requires upgrade	Needs to be provided	
Remarks _____					
_____					

C. Treatment System		Applicable	N/A
1.	<b>Treatment Train</b> (Check components that apply) Metals removal                      Oil/water separation                      Bioremediation Air stripping                      Carbon adsorbers Filters _____ Additive (e.g., chelation agent, flocculent) _____ Others _____ Good condition                      Needs Maintenance Sampling ports properly marked and functional Sampling/maintenance log displayed and up to date Equipment properly identified Quantity of groundwater treated annually _____ Quantity of surface water treated annually _____ Remarks _____		
2.	<b>Electrical Enclosures and Panels</b> (properly rated and functional) N/A                      Good condition                      Needs Maintenance Remarks _____		
3.	<b>Tanks, Vaults, Storage Vessels</b> N/A                      Good condition                      Proper secondary containment                      Needs Maintenance Remarks _____		
4.	<b>Discharge Structure and Appurtenances</b> N/A                      Good condition                      Needs Maintenance Remarks _____		
5.	<b>Treatment Building(s)</b> N/A                      Good condition (esp. roof and doorways)                      Needs repair Chemicals and equipment properly stored Remarks _____		
6.	<b>Monitoring Wells</b> (pump and treatment remedy) Properly secured/locked                      Functioning                      Routinely sampled                      Good condition All required wells located                      Needs Maintenance                      N/A Remarks _____		
<b>D. Monitoring Data</b>			
1.	Monitoring Data ✓ Is routinely submitted on time                      ✓ Is of acceptable quality		
2.	Monitoring data suggests: ✓ Groundwater plume is effectively contained                      Contaminant concentrations are declining		

**D. Monitored Natural Attenuation****1. Monitoring Wells (natural attenuation remedy)**

☒ Properly secured/locked   ☒ Functioning   ☒ Routinely sampled   ☒ Good condition  
☒ All required wells located   ☒ Needs Maintenance - *minor*   N/A

Remarks *Some minor maintenance needs - list attached.*

**X. OTHER REMEDIES**

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

**XI. OVERALL OBSERVATIONS****A. Implementation of the Remedy**

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

*The source control remedy is to prevent infiltration into the landfill & control landfill gas. Declining contaminants in wells near landfill suggest the cap is operating properly. Monitoring of gas probes & lack of off-site methane detects indicates that gas extraction system is functioning adequately. Groundwater data suggests that natural attenuation of the contaminant plume is occurring. Plume expansion has not been observed. The expanded well network to be constructed will provide additional data.*

**B. Adequacy of O&M**

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

*Site O&M appears to be adequate. There appears to be no reason that the cap & gas extraction system should not continue to function well. However, the lack of a restrictive covenant on the landfill prohibiting activities that could damage the cap affects long-term protectiveness. Restrictive covenants on down-gradient properties affected by the plume have yet to be implemented as required by the recently adopted ED.*

**C. Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

No such concerns were observed.

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None observed with exception that low flow methods for groundwater sampling may be more efficient + minimize generation of potentially contaminated waste water.

**Tomah Municipal Sanitary Landfill**

**Site Inspection**

**November 17, 2004**

**Monitoring Well Maintenance Needs**

(Attachment to Site Inspection Checklist)

<b>Monitoring Well</b>	<b>Maintenance Need Observed</b>
MW-7A	Wisconsin Unique Well ID number not observed on well
MW-12A	Inner PVC cap broken
MW-12C	Inner PVC cap broken
MW-13A & B	CRA found padlock removed on 11/16/04. Had been replaced by 11/17. If happens again, some protective measure should be taken.
MW-15A	Inner PVC cap broken
MW-17B	Padlock not working

**Attachment 6**

**Interview Records**

## INTERVIEW DOCUMENTATION FORM

The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

<u>John Busch</u> Name	<u>City Administrator</u> Title/Position	<u>City of Tomah</u> Organization	<u>11/17/2004</u> Date
<u>Brian Sandberg</u> Name	<u></u> Title/Position	<u>Conestoga Powers</u> Organization	<u>11/17/2004</u> Date
<u>Pete Storlie</u> Name	<u></u> Title/Position	<u>Conestoga Powers</u> Organization	<u>11/17/2004</u> Date
<u>Jack Eslien</u> Name	<u>Hydrogeologist</u> Title/Position	<u>Wise DPR</u> Organization	<u>12/23/2004</u> Date
<u>Bill Phillips</u> Name	<u>Street Dept. Foreman, City of Tomah</u> Title/Position	<u></u> Organization	<u>12/02/2004</u> Date
<u>Roger Williams</u> Name	<u>Neighbor</u> Title/Position	<u></u> Organization	<u>11/18/04</u> Date

Arlyss Henry	Neighbor	11/18/04
Kevin Rouse	Neighbor	11/18/04
Mrs. Schmitt	Neighbor	11/18/04



## INTERVIEW RECORD

Site Name: Tomah Mun. San. Landfill		EPA ID No.: WID 98060307	
Subject: Five-year Review		Time: 8AM	Date: 11/17/04
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other Location of Visit: Tomah City Hall, 819 Superior Ave		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Contact Made By:			
Name: Eileen Kramer		Title: RPM, Hydrogeologist	Organization: Wisc. DNR
Individual Contacted:			
Name: John Busch		Title: City Administrator	Organization: City of Tomah
Telephone No: 608-374-7420		Street Address: 819 Superior Ave	
Fax No:		City, State, Zip: Tomah, Wisc.	
E-Mail Address:			
Summary Of Conversation			
<p>Mr. Busch stated he is generally satisfied with cleanup work at landfill site. He is acquainted with many residents near landfill. Stated that future land development near the landfill would be limited by the presence of wetlands.</p>			

## INTERVIEW RECORD

Site Name: Tomah Mun. San. Landfill		EPA ID No.: WID 980610307	
Subject: Five-year Review		Time:	Date: 12/02/04
Type: <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other		<input checked="" type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Location of Visit:			
Contact Made By:			
Name: Eileen Kramer		Title: RPH, Hydrogeologist	Organization: Wisc. DNR
Individual Contacted:			
Name: Bill Phillips		Title: Street Dept. Foreman	Organization: City of Tomah
Telephone No: 608-343-2455		Street Address: 819 Superior Ave	
Fax No:		City, State, Zip: Tomah, Wisc.	
E-Mail Address:			
Summary Of Conversation			
<p>Mr. Phillips stated he is responsible to see that landfill is mowed. Mowed 3 times in summer of 2004. Has not observed any signs of trespass or vandalism.</p> <p>Has no significant concerns about work at landfill.</p> <p>Phillips suggested that it would be better to have the "warning light" on the control panel face towards North Road, instead of other side. Would be visible from North Road.</p>			

## INTERVIEW RECORD

Site Name: Tomah Mun. San Landfill		EPA ID No.: WID 98060307	
Subject: Five-year Review		Time:	Date: 11/17/04
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Location of Visit: Tomah Mun. San LF			
Contact Made By:			
Name: Eileen Kramer		Title: RPH, Hydrogeologist	Organization: Wise DNR
Individual Contacted:			
Name: Pete Storlie		Title:	Organization: CRA
Telephone No: 651-639-0913		Street Address: 1801 Old Hwy 8 NW	
Fax No:		City, State, Zip: St. Paul, MN 55112	
E-Mail Address:			
Summary Of Conversation			
<p>Mr. Storlie leads CRA staff in field work at the site. He has worked on the Tomah site many years.</p> <p>Mr. Storlie believes the groundwater monitoring at the site could be improved with the use of low flow purge + sample collection techniques</p>			

## INTERVIEW RECORD

Site Name: Tomah Mun. San. Landfill		EPA ID No.: WID 980610307	
Subject: Five-year Review		Time: 8 AM	Date: 11/17/04
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Location of Visit: Tomah Municipal San. L.F.			
Contact Made By:			
Name: Eileen Kramer	Title: RPH, Hydrogeologist	Organization: Wisc. DNR	
Individual Contacted:			
Name: Brian Sandburg	Title: Site manager	Organization: CRA	
Telephone No: 651-639-0913	Street Address: 1801 Old Hwy 8 NW		
Fax No:	City, State, Zip: St. Paul, MN 55112		
E-Mail Address: bsandburg@CRAworld.com			
Summary Of Conversation			
<p>Mr. Sandburg accompanied the inspection team for most of day. Stated that he is at the site at least 2 times/year. A CRA representative is on the site at least 1 time per month. Mr. Sandburg demonstrated the operation of the gas extraction system + described the components of the control panel. He and another CRA employee demonstrated the gas extraction well sampling. Sandburg showed the team the locations of the surface water samples from Deer Creek.</p>			

## INTERVIEW RECORD

Site Name: <u>Tomah Mun. San. Landfill</u>		EPA ID No.: <u>WID 98060307</u>	
Subject: <u>Five-year Review</u>		Time: <u>4:35</u>	Date: <u>11/18/04</u>
Type: <input checked="" type="checkbox"/> Telephone <input type="checkbox"/> Visit <input type="checkbox"/> Other		<input checked="" type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Location of Visit:			
Contact Made By:			
Name: <u>Eileen Kramer</u>	Title: <u>RPM, Hydrogeologist</u>	Organization: <u>Wisc. DNR</u>	
Individual Contacted:			
Name: <u>Roger Williams</u>	Title: <u>nearby resident</u>	Organization:	
Telephone No:	Street Address: <u>Co. "ET"</u>		
Fax No:	City, State, Zip: <u>Tomah, Wisc.</u>		
E-Mail Address:			
Summary Of Conversation			
<p>Residence on east side of North Ave, east of landfill.</p> <p>Williams found card Kramer had left @ his home + telephoned. Stated has been long-time resident. Has had city water about three years. Believes that value of his land has been damaged.</p>			

## INTERVIEW RECORD

Site Name: <u>Tomah Mun. San. Landfill</u>		EPA ID No.: <u>WID 980610307</u>
Subject: <u>Five-year Review</u>		Time: <u>11:15 AM</u> Date: <u>11/18/04</u>
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing
Location of Visit: <u>23550 Flame Ave., Tomah</u>		
Contact Made By:		
Name: <u>Eileen Kramer</u>	Title: <u>RPM, Hydrogeologist</u>	Organization: <u>Wisc. DNR</u>
Individual Contacted:		
Name: <u>Arlyssa Henry</u>	Title:	Organization: <u>resident</u>
Telephone No:	Street Address: <u>23550 Flame Ave</u>	
Fax No:	City, State, Zip: <u>Tomah, WI</u>	
E-Mail Address:		

## Summary Of Conversation

Ms. Henry's home is directly south of landfill. She also owns a wooded lot south of the landfill that had received run-off.

stated that she has no current problems or concerns with work at landfill. Has had no problems w/ run-off into her own yard or the wooded lot.

Gave Kramer verbal permission to walk through & observe wooded lot at 23624 Flame Ave. Kramer did not observe any evidence of

flooding or run-off.

## INTERVIEW RECORD

Site Name: Tomah Mun. San. Landfill		EPA ID No.: WID 98060307	
Subject: Five-year Review		Time: Noon	Date: 11/18/04
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other Location of Visit: 23671 Co. "ET"		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Contact Made By:			
Name: Eileen Kramer		Title: RPM, Hydrogeologist	Organization: Wisc. DNR
Individual Contacted:			
Name: Kevin Rouse		Title: nearby resident	Organization:
Telephone No: Fax No: E-Mail Address:		Street Address: 23671 Co. ET City, State, Zip: Tomah, Wisc.	
Summary Of Conversation			
<p>Home is east of landfill, on east side of Co. ET, or North Road.</p> <p>Rouse stated lived there about two years. Has had no problems with work at landfill. On city water.</p>			

## INTERVIEW RECORD

Site Name: Tomah Mun. San. Landfill		EPA ID No.: WID 980610307	
Subject: Five-year Review		Time:	Date: 11/18/04
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other Location of Visit: 813 W Veterans St.		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Contact Made By:			
Name: Eileen Kramer	Title: RPM, Hydrogeologist	Organization: Wise DNR	
Individual Contacted:			
Name: Mrs. Schmitt	Title: nearby resident	Organization:	
Telephone No:	Street Address: 813 W. Veterans St.		
Fax No:	City, State, Zip: Tomah, Wis		
E-Mail Address:			

## Summary Of Conversation

Mrs. Schmitt has been a resident here 9 years. House is supplied with city water. Has no problems or concerns regarding the superfund work at the landfill.

Mrs. Schmitt had seen the ad about the Five year review in the local newspaper.



## INTERVIEW RECORD

Site Name: Tomah Mun. San. Landfill		EPA ID No.: WID 98060307	
Subject: Five-year Review		Time:	Date: 12/28/04
Type: <input type="checkbox"/> Telephone <input checked="" type="checkbox"/> Visit <input type="checkbox"/> Other Eau Claire, WI		<input type="checkbox"/> Incoming <input type="checkbox"/> Outgoing	
Location of Visit: WDNR office, 1300 W. Clairemont WI			
Contact Made By:			
Name: Eileen Kramer		Title: RPM, Hydrogeologist	Organization: Wisc. DNR
Individual Contacted:			
Name: Jack Eslien		Title: Hydrogeologist	Organization: Wisc. DNR
Telephone No: 715-839-3700		Street Address: 300 W. Clairemont Ave	
Fax No:		City, State, Zip: Eau Claire, WI 54701	
E-Mail Address:			
Summary Of Conversation			
<p>Mr. Eslien provided field oversight for the agencies during cap construction the summer of 2000. Eslien stated that construction work was performed in a well organized &amp; competent manner. Construction quality assurance plan was followed. Seals in cap materials were pressure tested by contractor with special attention around gas extraction wells. Some seals had to be re-done. Daily inspections of site were conducted.</p> <p>Mr. Eslien was aware of site since 1978 when Sunnyvale residents started moving in.</p>			

**Attachment 7**

**Public Outreach**

**UWEX UPDATE**

By Bill Halfman  
Ag Agent  
Monroe Co. Extension Office

**DAIRY RATION UPDATE  
DEC. 15 IN SPARTA**

Making best use of the highly variable and in some cases poorer quality feed we have this year can be a real challenge when feeding a dairy herd.

On Dec. 15 UW-Extension will be holding a workshop on how to best manage this year's variable and poor quality feeds

when feeding the dairy herd.

The program will be held at the Colonial Bowling and Banquet Center in the smaller meeting room.

Presentations will begin promptly at 1 p.m. and should end about 2:30 p.m.

Pat Hoffman, UW Dairy



BILL HALFMAN

Science Specialist, will present information on management practices for how to best use this year's highly variable feed quality to minimize negative impacts on the dairy herd.

Halfman will also present a brief presentation on evaluating economic losses due to poor milk quality, and how to use the Milk Money program to work towards stopping those losses.

Sponsors for the program are Sparta Co-op Services, Sparta, and Heartland Co-op, Cashton.



## Status Review to Begin Tomah Municipal Sanitary Landfill Superfund Site Tomah, Wisconsin Comments Invited



Wisconsin Department of Natural Resources, with help from U.S. Environmental Protection Agency, has begun a "five-year" review of the Tomah Municipal Sanitary Landfill Superfund site located on North Street in Tomah. The federal Superfund law requires a review at least every five years at sites where the cleanup is complete or underway, but levels of hazardous waste remain on the site. Agencies conduct this review to make sure the cleanup still protects people and the environment.

Cleanup of the landfill began in 2000 and consisted of the construction of a landfill cap made of a thick synthetic membrane and several feet of clay. The cap was finished off with topsoil and vegetation. This prevents water from mixing with the waste and reduces the movement of contaminants into ground water (underground supplies of fresh water). In addition, a gas extraction system was completed to safely vent landfill gases into the air.

More recently, EPA signed a cleanup decision to address ground-water contamination resulting from past leaks at the landfill. The plan calls for routine testing of ground water to make sure natural processes (dilution, biodegradation, etc.) continue to clean the ground water, sampling of Deer Creek and placing ground water use restrictions in the affected area. EPA, WDNR and parties responsible for the cleanup continue to develop plans for these activities.

During the upcoming review, WDNR, with help from EPA, will inspect the landfill to ensure the landfill cap and gas venting system are operating as designed, and will study ground water, surface water and landfill gas samples collected over the past five years. WDNR will then prepare a report of its findings and announce the findings in local newspapers.

WDNR and EPA invite you to provide information that you think might be important in this site review. Please provide your input to:

Eileen Kramer  
Hydrogeologist  
Wisconsin Department of Natural Resources  
West Central Region  
Bureau of Remediation and Redevelopment  
P.O. Box 4001  
Eau Claire, WI 54702  
Phone: (715) 839-3824  
Fax: (715) 839-6076  
Email: eileen.kramer@dnr.state.wi.us

Your information will most be valuable to reviewers if received by early December.

The five-year review report will be completed in spring 2005. Site-related documents are available for review at the Tomah Public Library, 716 Superior Ave. Background information is also available online at [epa.gov/region5/sites/tomah](http://epa.gov/region5/sites/tomah).

we are looking for a full-time and part-time teller position. Responsibilities include cash handling, balancing, customer service and new accounts. Previous experience as a teller a plus but not a requirement. We offer a competitive salary and benefits package. First Bank is an Equal Opportunity Employer.

Mail resume to: First Bank (Attn: Sara)  
1021 Superior Avenue, Tomah, WI 54660



A son, Cory Ray Jr., was born Nov. 9, 2004, to Ashley Anderson and Cory Birch Sr., Warrens. He weighed 7 lbs., 2 oz. and measured 19-1/2".

Subscribe to this  
newspaper 372-4123



## Status Review to Begin Tomah Municipal Sanitary Landfill Superfund Site Tomah, Wisconsin Comments Invited



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Elleen Kramer  
Hydrogeologist  
Wisconsin Department of Natural Resources  
West Central Region  
Bureau of Remediation and Redevelopment  
P.O. Box 4001  
Bau Claire, WI 54702  
Phone: (715) 839-3824  
Fax: (715) 839-6076  
Email: [elleen.kramer@dnr.state.wi.us](mailto:elleen.kramer@dnr.state.wi.us)

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Tomah Monitor Herald 11/15/04

10-30-10-01

Friday & Saturday  
November 26-27

\*including special orders and personalized gifts

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Hours: M-F, 10 a.m. - 6 p.m., Sat. 10 a.m. - 5 p.m.

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Holiday  
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## Status Review to Begin Tomah Municipal Sanitary Landfill Superfund Site Tomah, Wisconsin



### Comments Invited

Wisconsin Department of Natural Resources, with help from U.S. Environmental Protection Agency, has begun a "five-year" review of the Tomah Municipal Sanitary Landfill Superfund site located on North Street in Tomah. The federal Superfund law requires a review at least every five years at sites where the cleanup is complete or underway, but levels of hazardous waste remain on the site. Agencies conduct this review to make sure the cleanup still protects people and the environment.

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Foxxy Shopper 11/22/04